

MAKE THE WORLD BETTER



**RUDN
university**

ROADMAP IMPLEMENTATION REPORT

**We INTEGRATE
3D technologies and industrial
robots for large-sized products
restoration**



**We CREATE
new heterocyclic
compounds for diseases
treatment and diagnosis**



**We DEVELOP
connectivity algorithms
in ultra-dense 5G deployments**

**We DEVELOP international clusters and
ATTRACT talents across the world**



CLUSTERS OF RUDN UNIVERSITY: INDUSTRIAL-EDUCATIONAL PARTNERSHIP



2016

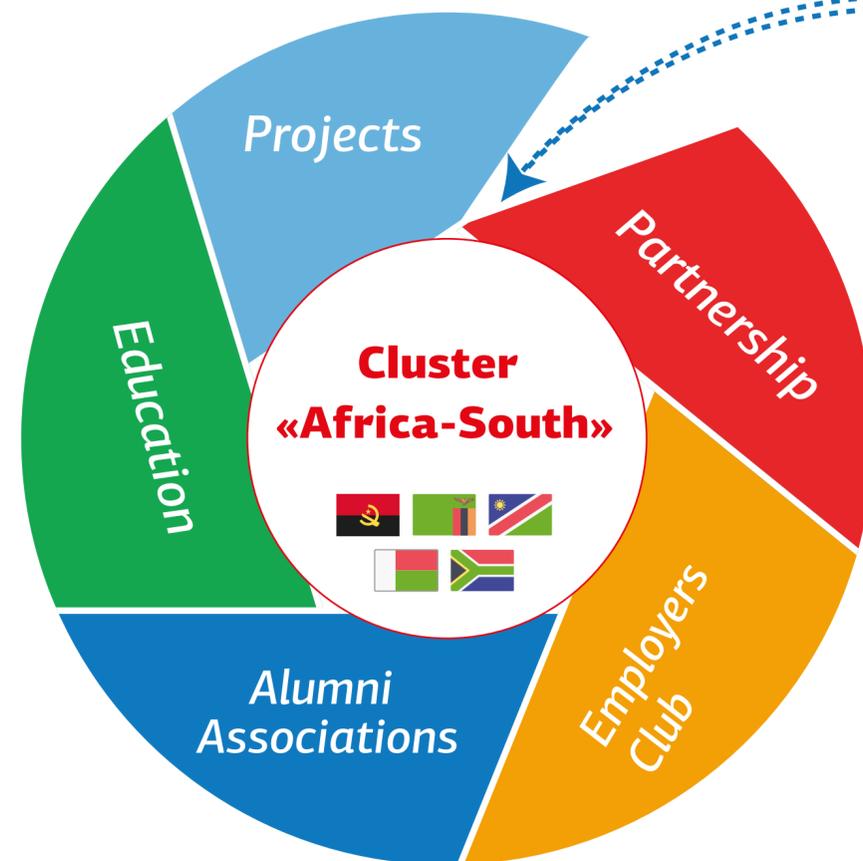
RUDN Olympiad: **35** countries**5225** participants

2018

160 winners, **125** awardees

Industrial and Educational Projects

- Personnel for national programs implementation: **education, health, ecology, tropical agriculture, engineering** including
- «Electrified and waste-free Namibia – 2030»
- RUDN Research Center – «Dundee»
Metallurgical Combine – University of Namibia
- Medical simulation and telemedicine education centers
- Network MBA programmes «Management in Healthcare»



Partnership

- National Governments bodies
- 19** universities
- Companies: Namwater, Nampower, Zambia Railway, PitAbel, Hospital Americo Buavida, Subsea 7, Endiama, Sonagol, Odebrecht, etc.
- Alumni Associations

Case

9 Clusters in **70** countries**11** Russian language centers**20** advanced-subject classes

2020

Research Projects

- New materials for renewable energy
- Remote sensing for industry, agriculture and environmental management
- HIV/AIDS prevention and treatment
- Therapy of hemorrhagic conditions of viral etiology
- Tropical agriculture and integrated plant protection

03 EDUCATION TRANSFORMATION



* 2016 2018 2020

PRESERVING BEST PRACTICES...

Customised Education

Cluster-Relevant Programmes

Mass Soft Skills Development

Talented Youths Recruiting

...AND ADDING MORE

Classical university campus

Academic freedom and CPD

Digital library center

Built-in ECTS grades

Foreign languages taught programmes

Accreditation by international agencies

MOOCs 3 28 60

12 bachelor and masters courses

16 CPD courses

10 subject areas

Students from 50+ countries

Online platform:

OPENLEARNING

Summer and winter schools 14 42 45

32 schools

5 subject areas

1 500+ students from

70+ countries

International accreditation 21 31 40

31 programmes accredited by ENQA agencies

~30% of international students on the programmes

CPD 41 74 100

E-learning и blended learning

74 programmes

21 joint programmes

3 800+ students from 60+ countries

Masters & PhD programmes

100+ joint programmes

200+ masters programmes

40+ MA&MS in English

RUDN University-awarded

PhD degree

36 PhD programmes in English

Multicultural and multilingual environment

Research results in the curricula

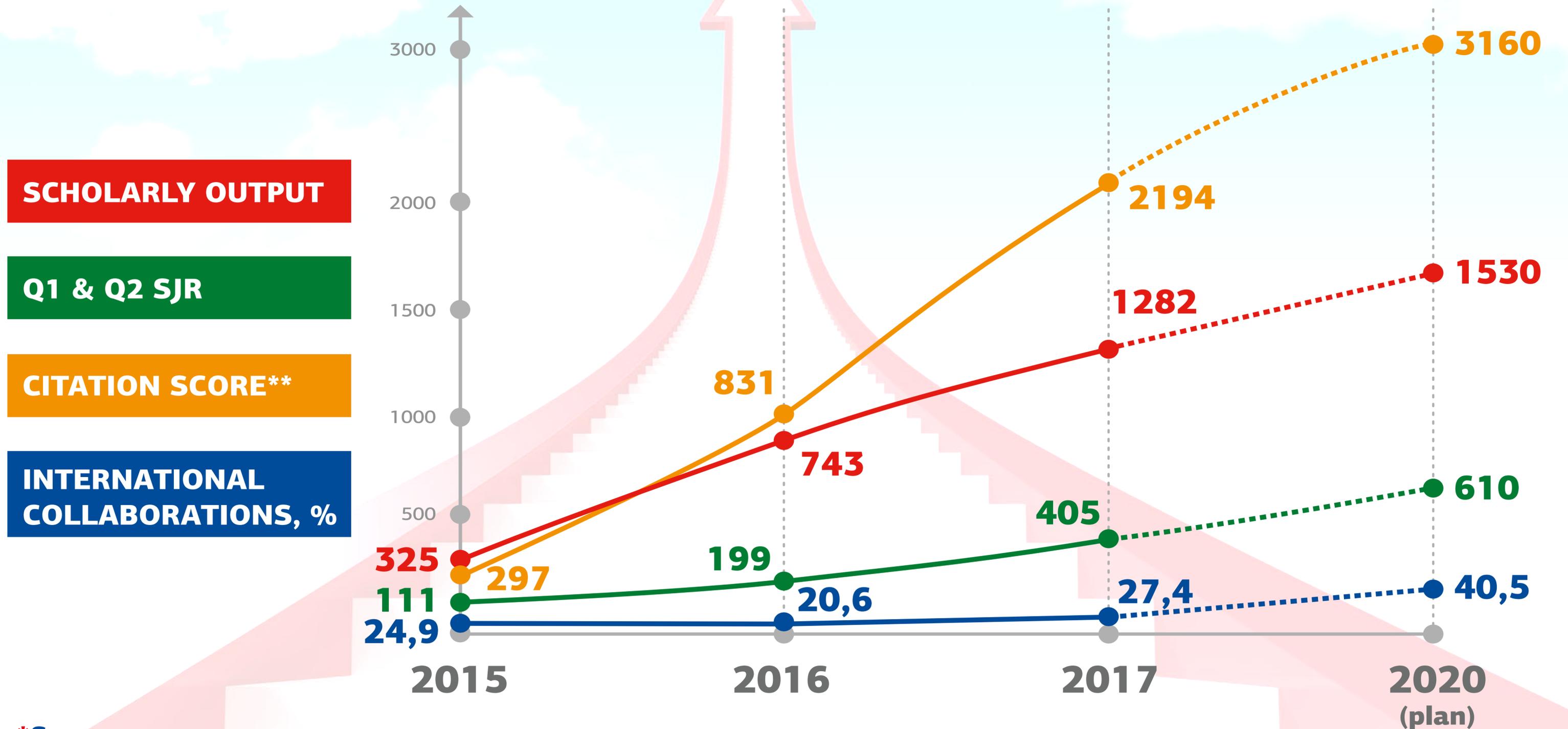
From Teaching to Learning

Blended learning and e-learning technologies

Focus on Masters and PhD programmes

International control of educational programmes quality

GROWING RESEARCH IMPACT*



*Scopus

**Citation during 2 years

APPLIED RESEARCH: MULTIDISCIPLINARY FOCUS



Chemistry & Medicine & Pharmacy

- **Diagnosis** – fluorescent heterocyclic compounds for enzyme-linked immunosorbent assay
- **Therapy** – efflux pumps' inhibition – for reducing of cancer cells' resistance to chemotherapy
- Preclinical tests, establishing of GLP standard vivarium

Partners: University of Bari Aldo Moro, Loughborough University, BIOREBA AG, BIOCROM diagnostics



Chemistry & Ecology & Agriculture

- Inexpensive and fauna friendly herbicides – safe for crop plants
- Fungicides exhibiting antiresistant effect – for the protection of food crops

Partners: University of Marburg, Syngenta, Shchelkovo Agrochem



QUALITY OF LIFE AND ECOLOGICAL URBAN ENVIRONMENT

Ecology & Economics & Computer Science

- Creation of artificial soil structures
- IoT technologies for urban greenery monitoring system
- Quantitative evaluation of urban ecosystem services

Partners: Wageningen University, Nanjing University, Tuscia University, University of New York, MSU, Moscow Government

Computer Science & IT

- Power control in heterogeneous 5G networks with shared frequency reuse
- Maintaining multi connectivity of moving objects in dense urban 5G mm Wave deployments
- Performance assessment of the drone-based 5G communications

Partners: University of Pisa, King's College London, Tampere University of Technology, Brno University of Technology, JSC Electronic Moscow

NETWORK DATA TRANSFER TECHNOLOGIES





INTEGRATED TECHNOLOGIES

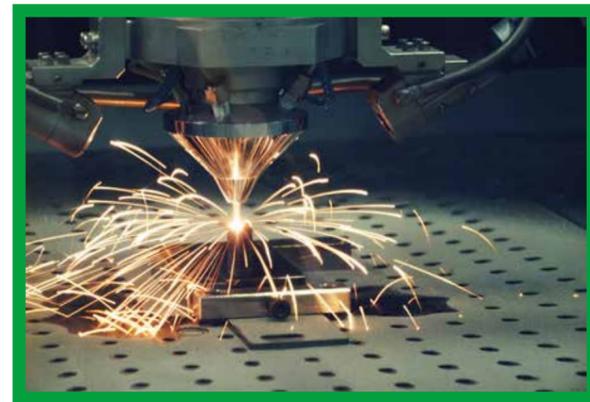
Additive Technologies & New Materials & Robotics & Chemistry

Research

- Restoration of details of machines of complex spatial shapes using 3D printing

Innovation

- Configuring the 3D printing and industrial robotics for the restoration of large-size products



Partners: Arkon, Instek, Dipole, Ostek-CMT, Loughborough University

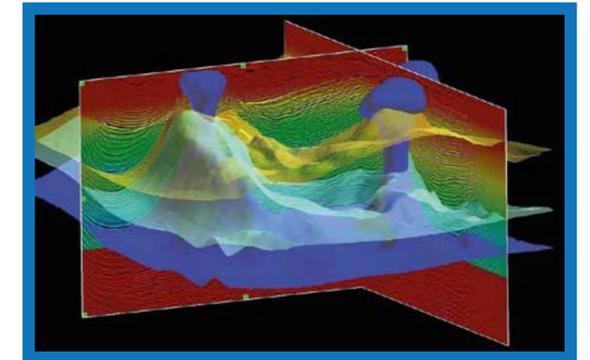


EFFICIENT EXTRACTION OF HYDROCARBONS

Geology & Geophysics & Engineering

Research

- Vibration and electrical seismic exploration of the upper part of mountain sections
- Amplification of vibration impact on reservoir rocks



Innovation

- Development of mobile seismic survey system with increased frequency range (up to 400 Hz)
- Development of above-ground equipment based on JP Technology hydrodynamic generator

Partners: Soyuzneftegazservice, Inc. Concord, Mechatronics, Halliburton, Roxar, Colorado School of Mines, University of Stavanger, Vietnam Petroleum Institute



PERSONALIZED MEDICINE

Bioengineering & New Materials & Chemistry & Pharmacy & Medicine

Research

- Biomedical thin-film coatings with antibacterial additives and porous titanium



Innovation

- Implants coating by vacuum plasma spraying
- Medication delivery by gradual degradation of implants coating
- Production of individually compatible («smart») implants

Partners: NCI-Swissnanocoat SA, Ostek-CMT, Rostech

Bioengineering & New Materials & Chemistry & Pharmacy

Research

- Cytochrome activity in drug metabolism

Innovation

- Creation of a test system for assessing the activity of P-450 cytochrome isoenzymes involved in the metabolism of over 90% of medications
- Bioavailability increasing and toxicity reducing of medication by melt extrusion



Partners: P.A. Herzen Moscow Oncology Research Institute, RF Ministry of Industry and Trade, University of Basel

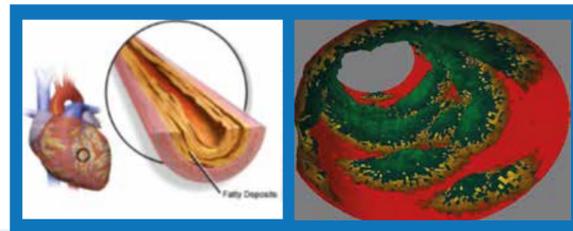


PERSONALIZED MEDICINE

Mathematics & Medicine

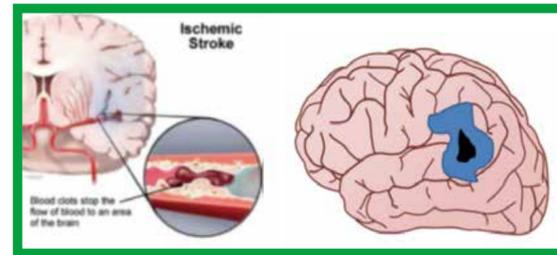
Cardiovascular System

- Mathematical model of blood clotting analysis to determine susceptibility to thrombosis



Simulation of atherosclerosis, growth and rupture of atherosclerotic plaque

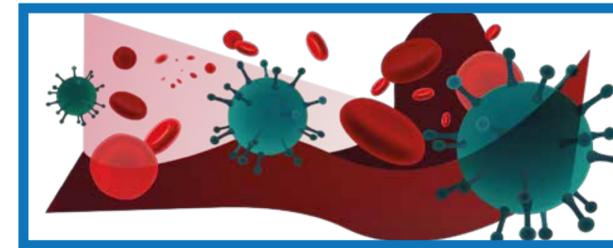
- Mathematical model of cerebral cortex electrostimulation for rehabilitation after stroke: determination of electrostimulation parameters to restore damaged functions



Immunology

- Spatial and multi-scale integrative models of HIV development:

- The rate of infection development, virus mutation in the body



- Treatment of viral infection, the possibility of restoring the immune system

Oncology

- Mathematical models of cancer tumor growth, tumor response to treatment



Partners: University Lyon 1 UCBL, Equipage Innovation, Heidelberg University, Technical University of Lisbon, University of Pompeu Fabra, Institut d'immunologie et des infections, MSU

Communication without borders

Russian language abroad

- Russian language certification: **780.000** people from **142** countries
- Teachers' advanced training: **5.000** people from **43** countries
- **Olympiads:**
Russian language "Torch of the Russian language"
Contest for bilinguals "I am the heir of two cultures":
67.000 participants from **32** countries

Data for 2016–2018 years

Foreign languages in Russia

- **Multilingual environment** → cultural centers, thematic linguistic spaces, multilingual projects: "Kitania", fellow club "French-Russian POCIDELKI", "Oriental Kaleidoscope"
- **Simultaneous** Interpreters' Training in **9** languages

RUDN University – International Research Center of Global Migration Processes

Institute of Modern Languages, Intercultural Communication and Migration

Joint laboratory with CNRS (France) «Language Dynamics in Minority Context»

Laboratory for Migration Processes

Priorities

- Diagnostics of regional and national models of migrants' social and cultural adaptation and integration
- Monitoring of security threats to the host community against the background of migration turbulence
- Migration legislation expertise
- Computer modelling of situational dynamics of migrants' behavior, statistical studies of linguocivilizational processes

RUDN UNIVERSITY: GLOBAL PROMOTION



Facebook
17.000.000+
 user reach

YouTube
RUDN University Planet
2.388.000+ video views
80% audience retention

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www.eng.rudn.ru
170% traffic growth

Usage top sections

- Educational programmes
- Admission

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Popular Science Media



200 exclusive materials
60.000.000 people – mass media audience every day

Internationally co-authored publications (2015-2018)



RUDN University in International Rankings

