

Fragmented health care governance hampers coordination across the system. The Ministry of Health supported by a dedicated Crisis Management Team played a major role in coordinating the country's response to the COVID-19 pandemic. This body consists mainly of representatives from various state authorities rather than independent public health specialists or scientists.

Problems with data collection undermined capacity for data-informed decision making (from State of Health in the EU · Poland · Country Health Profile 2021 see https://health.ec.europa.eu/system/files/2021-12/2021_chp_poland_english.pdf)

Part of Poland's national Recovery and Resilience Plan (RRP) planned investment in medical and health research and development includes investment in the biomedical sector and its ecosystem to strengthen capacity to monitor, detect and analyse potential epidemiological threats. Antimicrobial resistance is an area of concern in Poland, given that the consumption of antibiotics in the community is much higher than the EU average. Although Poland's total antibiotic consumption started to decline from 2017, with a sharp drop noted in the first year of the pandemic, the number of doses consumed has since started to increase. (from State of Health in the EU · Poland · Country Health Profile 2023 see https://health.ec.europa.eu/system/files/2023-12/2023_chp_pl_english.pdf)

National Institute of Public Health - National Institute of Hygiene National Institute of Research (NIPH-NIH NIR) in Polish Narodowy Instytut Zdrowia Publicznego – Państwowy Zakład Higieny Państwowy Instytut Badawczy (NIZP–PZH PIB) should be considered a leading institution in fast response to any epidemic and pandemic. It hosts three national laboratories belonging to WHO networks, one of those laboratories is part Global Influenza Surveillance and Response System (GISRS). One of the roles of GISRS is coordination of SARS-CoV-2 surveillance. At the National Level, in Poland GISRS member is: National Influenza Centre (NIC), Virology Department
National Institute of Public Health – National Institute of Hygiene

Furthermore, National Institute of Public Health - National Institute of Hygiene National Institute of Research (NIPH-NIH NIR) is Coordinating Competent Body of European Centre for Disease Prevention and Control (ECDC <https://www.ecdc.europa.eu/en/national-institute-public-health-national-institute-hygiene-poland>)

Also, NIPH-NIH NIR has BSL3 laboratory. In general, NIPH-NIH NIR is the first response institution during epidemic and pandemic emergencies.

COVID-19 pandemics has proven, that **Medical University of Białystok**, Poland quickly found himself in the new reality. In Academic Center for Pathomorphological and Genetic-Molecular Diagnostics Sp. z o. o. molecular diagnostic of SARS-CoV-2 was performed for the whole region. This Centre is one of the largest in the country and the largest in the north-eastern region comprehensive diagnostic centre performing the following examinations: histopathological, cytological, intraoperative, histochemical, immunohistochemical, autopsy as well as molecular biology and cytogenetics, licensed by the Polish Society of Pathologists as a Level III diagnostic center reference: no. 68/2022.

Moreover, many scientific activities were undertaken in co-operation with various Institutions, such as European Union (EU-wide Covid-19 vaccine trial network), Marshal's Office in Podlaskie Region, National Science Centre, The National Centre for Research and Development, Medical Research Agency, Polish National Agency for Academic Exchange, Polish Society of Epidemiologists and Infectious Diseases Specialists. Over 50 local projects financed by Statutory Funds of Medical University of Białystok, regarding to COVID-19 were also performed. Prof. Robert Flisiak from Medical University of Białystok is the PI of SARSTer project, which is a retrospective, non-interventional research program financed by Polish Society of Epidemiologists and Infectious Disease Specialists and Medical Research Agency (<http://www.pteilchz.org.pl/informacje/sarster/>).

List of projects in external co-operation:

1. Extracellular vimentin as a signaling molecule in the pathogenesis of inflammation and central nervous system damage in patients with COVID-19. 17.01.2023-16.01.2026. PI: Łukasz Suprewicz, PRELUDIUM National Science Centre, Poland (NCN) https://projekty.ncn.gov.pl/index.php?projekt_id=553728
2. Sense of anxiety of SARS-CoV-2 infection and the perception of COVID-19 vaccination among the older adults in

Poland. 01.01.2023-31.12.2023 PI: Mateusz Cybulski The National Centre for Research and Development (NCBR)
https://www.umb.edu.pl/aktualnosci/26026,Projekt_dr_hab_Mateusza_Cybulskiego_i_dr_Andreia_Shpakoua_laur_eatem_II_tury_konkursu_NCBR_%E2%80%9ESolidarni_z_naukowcami%E2%80%9D

3. Could oxidative stress be a factor responsible for severity of COVID-19? 08.07.2022-07.07.2023 PI: dr Justyna Dorf, National Science Centre, Poland (NCN)

https://www.umb.edu.pl/aktualnosci/25594_Dr_Justyna_Dorf_laureatem_konkursu_MINIATURA_6

4. VACCELERATE - European Corona Vaccine Trial Accelerator Platform. 28.01.2021-27.01.2024 PI: prof. Robert Flisiak Horizon 2020: European Commission H2020-IBA-SC1-CORONAVIRUS-2020-4 (EU-wide Covid-19 vaccine trial network) (Akcje wspierające i koordynujące w ramach Programu ramowego Unii Europejskiej w zakresie badań naukowych i innowacji Horyzont 2020) <https://vaccelerate.eu/>

5. Rise or fall? Short and longterm health and psychosocial trajectories of COVID-19 pandemics. 11.02.2021-10.02.2025 PI: prof. Karol Kamiński, OPUS National Science Centre, Poland (NCN)

https://projekty.ncn.gov.pl/index.php?projekt_id=486154

6. Development and clinical validation of a new hybrid molecular test (SARS-HYB45) for direct and rapid diagnosis of SARS-CoV-2: laboratory and point-of-care (POC) application. 01.01.2021-31.08.2021 PI for Clinics: prof. Sławomir Pancewicz European Regional Development Fund under the Operational Program Smart Growth

<http://aodp.pl/projekt-ue/>

7. An analysis of the SARS-CoV-2 virus genome and the genome of COVID-19 patients in order to develop a set of genetic markers determining individual susceptibility to SARS-Cov-2 coronavirus infection and the severity of the course COVID-19. 27.04.2020-31.05.2021. PI: prof. Marcin Moniuszko Medical Research Agency (ABM)

https://perspektywy.pl/portal/portal/index.php?option=com_content&view=article&id=4609&catid=22&Itemid=119

8. Involvement of cell-surface vimentin in SARS-CoV-2 cell entry. 22.02.2020-21.01.2022 PI: prof. Robert Bucki. SZYBKA ŚCIEŻKA DOSTĘPU DO FUNDUSZY NA BADANIA NAD COVID-19 National Science Centre, Poland (NCN)

https://www.ncn.gov.pl/sites/default/files/pliki/covid_bucki_pl.pdf

9. Physical activity and strategies that cause COVID-19 occurrence among medical and non-medical students on both sides of the eastern border following immediate changes in the epidemiological situation. 01.03.2022-28.02.2023. PI: prof. Elżbieta Krajewska-Kułak & dr hab. Mateusz Cybulski, NAWA

https://www.umb.edu.pl/umiedzynarodowienie/ogloszenia/24752,NAWA_dofinansowala_projekt_UMB_w_ramach_programu_%E2%80%9ESolidarni_z_Bialorusia-Naukowcy%E2%80%9D

Older projects:

10. A center for the analysis of civilization or environmental threats and ways to counteract them. 23.12.2008 – 30.11.2015 European Regional Development Fund under the Operational Program Development of Eastern Poland

<https://naukawpolsce.pl/aktualnosci/news%2C396481%2Cpowstaje-osrodek-biostatystyki-na-universytecie-medycznym-w-bialymstoku.html>

11. Antivirals for influenza Like Illnes? An rCt of Clinical and Cost effectiveness in primary CarE (ALIC4E). 1.10.2015 - 31.12.2020 PI: prof. Sławomir Chlabicz 7th Framework Programme: European Commission

<https://www.clinicaltrialsregister.eu/ctr-search/trial/2014-004471-23/SE>

Another very important shareholder in the response to COVID-19 pandemic was **Jagiellonian University** and more recently to the very recent outbreak of the H5N1 avian influenza in domesticated cats in Poland.

The Jagiellonian University (JU) is one of the oldest universities in Europe (established in 1364 A.D.) and the best university in Poland. Since its very beginning, Jagiellonian University has been an international institution. Poles, Ruthenians, Lithuanians, Hungarians, Germans, Czechs, the Swiss, the English, the Dutch, the French, the Spanish, Italians, and even Tatars studied here in the old days. Today, the JU comprises 16 Faculties, where nearly 4 thousand academic staff conduct research and provide education to over 40 thousand students within the framework of more than 80 fields of study. The researchers and state-of-the-art infrastructure make the JU one of the leading Polish scientific institutions, collaborating with major academic centers worldwide. The Jagiellonian University is also home to about 150 student societies, where young researchers pursue their academic interests and develop friendships with people who share their passion.

Additionally, the University was recognized by the international databases Web of Science and Elsevier Scopus as possessing the most prolific researchers in Poland, publishing the most academic papers. In 2018, it was the only Polish and Eastern European higher education institution in Reuter's Top 100: Europe's Most Innovative Universities ranking. The unique large-scale projects run by the Jagiellonian University include the Jagiellonian Centre for Experimental Therapeutics, Malopolska Centre for Biotechnology, OMICRON, and Synchrotron Radiation Centre "Solaris"¹.

Scientific background

The JU stands as a premier R&D unit, equipped with state-of-the-art facilities. Within the unit, a dedicated research group excels in the field of virology, emphasizing emerging viruses. The team is primarily interested in understanding the interphase between the virus and the host.

Research in the field is propelled by cutting-edge tools and methodologies. Notably, the team utilizes advanced 3D tissue culture models that replicate the natural microenvironments of various infection sites, including the lungs, bronchi, guts, and

brains, among others. These models facilitate also an ex vivo examination of the immune system's response to infections. The team employs an array of sophisticated tools that enable the modification of 3D cultures, such as lentiviral gene engineering, gene silencing, CRISPR/Cas9 technology, and co-cultures. Additionally, comprehensive analysis techniques, including confocal microscopy, 3D visualization, Scanning Electron Microscopy (SEM), and super-resolution microscopy, are integral to studying viral infections within the context of natural tissue structures²⁻⁵.

Through these methods, the JU researchers have identified several receptors, co-receptors, and restriction factors of human and animal coronaviruses and flaviviruses⁶⁻¹¹. Their work has also led to the proposition of potential drug candidates.

Furthermore, the JU scientists boast extensive expertise in molecular biology and biochemistry. This expertise encompasses the expression of viral and human proteins in diverse model organisms, ranging from bacteria, insect cells, and the Leishmania model to yeast and mammalian cells.

The JU runs high-containment research laboratories, which are certified for work with highly pathogenic viruses, including the airborne pathogens. The laboratories include the in vitro/ex vivo unit, and the animal facility able to house the mice.

Emergency diagnostics and genetic monitoring

While JU is not a diagnostic unit, the scientists and the infrastructure allows for a rapid response to the biological threats and deployment of the diagnostics. The JU unit set up and implemented the diagnostic protocols and was responsible for the regional COVID-19 diagnostics at the early stages of the pandemic. The monitoring also included monitoring of the virus levels in the sewers of the city of Krakow in collaboration with the municipal water supply company in collaboration with the sanitary inspections. Further, the unit was responsible for the national SARS-CoV-2 sequencing programs, delivering the data in years 2020-2022 allowing for monitoring of the virus variability in Poland before the responsible units deployed the routine sequencing programme¹²⁻¹⁴.

Pathogen identification and tracking

The Scientists at JU also have expertise in the advanced diagnostics and virus tracking. To make an example, during the very recent outbreak of the H5N1 avian influenza in domesticated cats in Poland, they were responsible for the rapid response and swift communication with the European Commission within the Durable project¹⁵. Similar response has been deployed when the first reports on the human-mink-human virus transfer was recorded in Poland¹⁶.

Testing the countermeasures

Responding to the urgent need, the JU scientists were responsible for the testing of the non-pharmaceutical countermeasures in collaboration with official service providers and decisionmakers^{17,18}.

Antiviral drug testing and development

Drug discovery effort is an important part of the research at JU. JU bases the projects on a solid ground of basic research and employ ex vivo models to better mirror the human or animal body. Recognizing that isolated efforts are insufficient, the research is carried out within collaborative teams with chemists, medicinal chemists, bioinformaticians, and the commercial sector to develop and commercialize antivirals.

The research founded the discovery of the approved drugs^{19,20} and the commercialization process has led to formation of spin off companies:

- Acatavir. A spin-out company established for the development of the invention PCT/PL2019/050071, which received funding under the BridgeAlfa program and has now completed clinical trials for a veterinary medicinal product.
- StartIt Vet. An external company created for the development of the invention EP 2849763, for a veterinary medicine product.
- Nanomerics. An external company from the United Kingdom, which is jointly developing the HTCC invention (license) with Virpax Pharma (US).

Consultations and education

JU members are actively involved in shaping the public perception of the biological threats and provide expert opinions on the situation and the types of actions deemed necessary. In the recent past they were involved in advisory activities at the level of the city (Krakow City Council), the country (Medical Council to the Prime Minister of Poland, Advisory Team to the Minister of Science and Higher Education, Health Protection Council to the President of Poland, AOTMiT) and Europe (Expert Team to the European Commission).

Selected National Collaborations

- University of Gdańsk - Laboratory of Virus Molecular Biology and Laboratory of Recombinant Vaccines
- National Institute of Public Health - National Institute of Hygiene, Poland.
- Medical University of Białystok - Department of Infectious Diseases and Hepatology
- Military Institute of Hygiene and Epidemiology - Biological Threats Identification and Countermeasure Centre.
- Medical University of Lublin – Department of Virology

- Nicolaus Copernicus University in Bydgoszcz, Faculty of Medicine
- Fire Department - Rescue and Fire Fighting Services no. 6, Regional Headquarters of the State Fire Service
- Adam Mickiewicz University in Poznań – Faculty of Biology
- Institute of Biotechnology and Molecular Medicine (IBMM)
- Łukasiewicz Research Network – Nanotechnology Center
- Institute of Hematology and Transfusion Medicine in Warsaw - Department of Virology
- Municipal water supply companies

List of international projects in external co-operation (last 6 years):

1. 2023—2027. DURABLE. DURABLE: Delivering a Unified Research Alliance of Biomedical and public health Laboratories against Epidemics. EU HEDEA EU4H.
2. 2021—2024. MUSECoV - Multi-scale Eco-evolution of Coronaviruses: from surveillance toward emergence prediction. EU ERA-NET CO-FUND ICRAD.
3. 2020—2025. EU IMI2. Corona accelerated R&D in Europe (CARE). Horizon2020/IMI/Efpia
4. 2018—2022. Organovir. Organoids for Virus Research. EU H2020-MSCA-ITN-2018 ITN Network.

List of national projects in external co-operation (last 6 years):

5. 2021—2022. ABM. Monitoring of the SARS-CoV-2 genetic variability in Poland.
6. 2020—2023. SARS-CoV-2 research. Ministry of Science.
7. 2020-2023. Development of innovative technology for removing coronaviruses, including SARS-CoV-2, from the air using photovoltaic layers implemented in an air purification device. NCBIR.
8. 2020-2022. Analysis of the gut microbiome as a diagnostic, prognostic, and therapeutic factor in patients with COVID-19. NCBIR.
9. 2019-2024. The metabolism of Baltic cyanobacteria as a natural library of starting compounds in the search for new antiviral drugs.
10. 2019-2024. O'nyong-nyong virus CP protease: substrate profiling, design and synthesis of inhibitors and molecular probes along with their biochemical analysis. NCN.
11. 2018—2023. Cellular proteases during coronaviral infection. 2018-2021. NCN.
12. 2018—2020. Novel inhibitors of herpes virus protease. NCN.
13. 2018-2024. Polymer inhibitors of the Zika virus. NCN.
14. 2019—2019. Human coronavirus OC43 and Zika virus internalization. NCN.
15. 2017—2022. Zika virus NS3 protease. NCN.
16. 2017—2019. MATR3/PSF in the regulation of HIV-1. NCN.
17. 2017—2019. Hybrid adsorbents for concentrating, purification and detection viruses. NCN.

R&I Infrastructures

BSL2 laboratory of virology

Fully equipped BSL2 laboratory approved for human and animal cells and viruses up to BSL2 level, including viruses transmitted by vectors and aerosols. Flow cytometry, sorting, imagestream, and other tools are available internally.

BSL3+ laboratory of virology

Fully equipped BSL3+ laboratory approved for human and animal cells and viruses up to BSL3+ level, including viruses transmitted by vectors and aerosols.

Biochemical laboratory

Biochemical assays; WB analysis; dot-blot analysis; protein expression and purification infrastructure and others.

Laboratory of molecular biology.

Automated nucleic acid isolation; RT; PCR; qPCR; clean environment chambers; cloning chambers; bacterial cultures & plasmid isolation infrastructure and others.

Core facility for the NGS

Fully equipped NGS laboratory serving as the core facility within the unit. Different technologies are available, including illumine, Thermofisher, and nanopore.

Core facility for the proteomics

Fully equipped mass spectrometry unit serving as the core facility within the unit.

Overview - Jagiellonian University - Jagiellonian University. https://en.uj.edu.pl/en_GB/about-university/overview.

Szlachcic, W. J. *et al.* SARS-CoV-2 infects an in vitro model of the human developing pancreas through endocytosis. *iScience* **25**, 104594 (2022).

Barreto-Duran, E. *et al.* The interplay between the airway epithelium and tissue macrophages during the SARS-CoV-2 infection. *Front Immunol* **13**, (2022).

Milewska, A. *et al.* Kallikrein 13 serves as a priming protease during infection by the human coronavirus HKU1. *Sci Signal* **13**, 9902 (2020).

Milewska, A. *et al.* Replication of Severe Acute Respiratory Syndrome Coronavirus 2 in Human Respiratory Epithelium. *J Virol* **94**, (2020).

Owczarek, K. *et al.* Zika virus: Mapping and reprogramming the entry. *Cell Communication and Signaling* **17**, (2019).

Huang, X. *et al.* Human coronavirus HKU1 spike protein uses O-acetylated sialic acid as an attachment receptor determinant and employs hemagglutinin-esterase protein as a receptor-destroying enzyme. *J Virol* **89**, (2015).

Szczepanski, A. *et al.* Canine Respiratory Coronavirus, Bovine Coronavirus, and Human Coronavirus OC43: Receptors and Attachment Factors. *Viruses* **11**, (2019).

Hofmann, H. *et al.* Attachment factor and receptor engagement of SARS coronavirus and human coronavirus NL63. *Advances in Experimental Medicine and Biology* vol. 581 (2006).

Hofmann, H. *et al.* Human coronavirus NL63 employs the severe acute respiratory syndrome coronavirus receptor for cellular entry. *Proc Natl Acad Sci U S A* **102**, (2005).

Milewska, A. *et al.* Entry of human coronavirus NL63 into the cell. *J Virol* **92**, (2018).

Alm, E. *et al.* Geographical and temporal distribution of SARS-CoV-2 clades in the WHO European Region, January to June 2020. *Eurosurveillance* **25**, 2001410 (2020).

Pancer, K. *et al.* The SARS-CoV-2 ORF10 is not essential in vitro or in vivo in humans. *PLoS Pathog* **16**, e1008959 (2020).

Mazur-Panasiuk, N. *et al.* Expansion of a SARS-CoV-2 Delta variant with an 872 nt deletion encompassing ORF7a, ORF7b and ORF8, Poland, July to August 2021. *Eurosurveillance* **26**, 2100902 (2021).

Rabalski, L. *et al.* Emergence and potential transmission route of avian influenza A (H5N1) virus in domestic cats in Poland, June 2023. *Eurosurveillance* **28**, 2300390 (2023).

Rabalski, L. *et al.* Zoonotic spill-over of SARS-CoV-2: mink-adapted virus in humans. *Clinical Microbiology and Infection* **28**, 451.e1-451.e4 (2022).

Florek, D., Burmistrz, M., Potempa, J. & Pyrc, K. Stability of infectious human coronavirus NL63. *J Virol Methods* **205**, (2014).

Mazur-Panasiuk, N., Botwina, P., Kutaj, A., Woszczyna, D. & Pyrc, K. Ozone Treatment Is Insufficient to Inactivate SARS-CoV-2 Surrogate under Field Conditions. *Antioxidants* 2021, Vol. 10, Page 1480 **10**, 1480 (2021).

Sheahan, T. P. *et al.* Broad-spectrum antiviral GS-5734 inhibits both epidemic and zoonotic coronaviruses. *Sci Transl Med* **9**, (2017).

Pyrc, K. *et al.* Inhibition of human coronavirus NL63 infection at early stages of the replication cycle. *Antimicrob Agents Chemother* **50**, (2006).

Links:

<http://virogenetics.info/>
<https://mcb.uj.edu.pl/>
<https://www.uj.edu.pl/>

R&I Policies and Strategies The information is not exhaustive and should be updated regularly

Country has a dedicated strategy for research and innovation related to pandemic threat?	Yes Ministry of Health (2020), Strategia walki z pandemią COVID-19. Wersja 3.0. jesień 2020, Warsaw. https://www.gov.pl/web/zdrowie/strategia-walki-z-pandemia-covid19 https://www.gov.pl/web/gis/choroby-zakazne4 http://www.pteilchz.org.pl/informacje/rekomendacje/
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Country has an open science portal with information on publicly financed scientific research?	Local portals: https://www.umb.edu.pl/mpb https://ppm.umb.edu.pl/index.seam
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Country portals about support possibilities and maps of the projects:

<https://www.gov.pl/web/ncbr/harmonogram-konkursow--2023>
<https://www.ncn.gov.pl/>
<http://www.pteilchz.org.pl/>
<https://ppm.edu.pl/index.seam>
<https://abm.gov.pl/>

And local portals about support possibilities (with maps of the projects):

<https://funduszeupodlaskie.eu/>
<https://rpo.wrotapodlasia.pl/>

Country has R&I webpage on COVID

Website open science/ open data initiative with respect to pandemic threats, such as COVID-19 open

Name	URL	Short Description
An analysis of the SARS-CoV-2 virus genome	https://aodp.pl/projekt-ue/ https://pacjent.gov.pl/aktualnosc/sprawdz-jak-mozesz-przechodzic-covid-19	An analysis of the SARS-CoV-2 virus genome and the genome of COVID-19 patients in order to develop a set of genetic markers determining individual susceptibility to SARS-Cov-2 coronavirus infection and the severity of the course COVID-19. Based on the project a risk calculator of COVID-19 severity was created and available on the official website of Health Ministry, which was used by 300 000 patients.

COVID-19 <http://www.pteilchz.org.pl/>

Country has coordinating structures to link public health needs and research needs?

YES Country level: The research are conducted according to the needs of current situation

<https://www.gov.pl/web/zdrowie/strategia-walki-z-pandemia-covid19>
<https://www.gov.pl/web/gis/choroby-zakazne4>
<http://www.pteilchz.org.pl/informacje/rekomendacje/>

Coordinating structures URL <https://abm.gov.pl/>

R&I Infrastructures, Initiatives and Clinical Trials The information is not exhaustive and should be updated regularly

Country has the following research infrastructure for infectious diseases and outbreaks available, or under construction

Emergency intervention units; Clinical trial units; High level isolation units; High level isolation transport; Open genome deposits for viruses; Open genome deposits for bacteria; Open genome deposits for AMR; Reference centres of excellence; Other

Name Infrastructure	Type Infrastructure	URL	Max Capacity	Available for	Open to
Academic Center for Pathomorphological and Genetic-Molecular	Molecular diagnostics, Biobank, Reference centres of excellence	http://aodp.pl	no limits	Academia	Yes
Biobank - Medical University of Bialystok	Open genome deposits	https://www.umb.edu.pl/nauka/centra_badawcze/biobank		Academia	Yes
BSL3 lab at NIPH-NIH NIR	BSL3	https://www.pzh.gov.pl/bsl3-research/			
Clinical Research Centre	Clinical Trial Units	https://www.umb.edu.pl/wl/centrum_badan_klinicznych		Academia	Yes
Different labs and other RI at Malopolska Centre of Biotechnology (MCB) in Krakow	BSL3+	http://virogenetics.info/?page			
Epidemiological Laboratory	Open genome deposits for viruses ; High level isolation units	https://www.umb.edu.pl/mpb	no limits	Academia	Yes
University Hospital in Bialystok	Clinical Trial Units	https://uskwb.pl		Academia	Yes

Country supporting the participation to the following ESFRI initiatives relevant for infectious diseases

BBMRI; ECRIN

Website network of clinical trials (e.g. to facilitate the access to clinical trials) the country is involved in

<https://eu-response.eu/>

<https://ecrin.org/>

<https://vaccelerate.eu/>

Budget mobilisation mechanisms and funding sources *The information is not exhaustive and should be updated regularly*

Basic Research

url Country: <https://www.ncn.gov.pl/en>

funding for basic research accessible for industry? No

source of funding Public (research) agencies; Private industries/ philanthropic

Applied Research

url Country: <https://www.gov.pl/web/ncbr> and <https://www.gov.pl/web/ncbr/harmonogram-konkursow--2023>,
<https://abm.gov.pl/pl/aktualnosci>
<https://www.ncn.gov.pl/en>

Region: <https://funduszeuepodlaskie.eu/>

funding for applied research accessible for industry?

source of funding Public (research) agencies; Private industries/ philanthropic

Translational Research

url Country: <https://www.gov.pl/web/ncbr> and <https://www.gov.pl/web/ncbr/harmonogram-konkursow--2023>,
<https://abm.gov.pl/pl/aktualnosci>
<https://www.ncn.gov.pl/en>

Region: <https://funduszeuepodlaskie.eu/>

funding accessible for industry? Yes

source of funding Public (research) agencies

Clinical Research (in general)

url Country: <https://abm.gov.pl/pl/aktualnosci>
<http://www.pteilchz.org.pl/>

Region: <https://funduszeuepodlaskie.eu/>

funding accessible for industry? Yes

source of funding Public (research) agencies; Private industries/ philanthropic

phase funded? Phase 1; Phase 2; Phase 3; Phase 4

Clinical Research (in pandemic phase)

url <https://www.umb.edu.pl/owbk>

accessible for industry?

source of funding Public (research) agencies

phase funded ? Phase 1; Phase 2; Phase 3; Phase 4

Innovation Projects

url Support possibilities - country level: <https://www.gov.pl/web/ncbr>
<https://abm.gov.pl/>

Region: <https://funduszeuepodlaskie.eu/>

funding for innovation projects accessible for industry? Yes

source of funding Public (research) agencies; Private industries/ philanthropic

Flexible funding possible during emergency

Country level : <https://www.gov.pl/web/ncbr/harmonogram-konkursow--2023>
<https://abm.gov.pl/pl/aktualnosci>
<https://www.ncn.gov.pl/>

regional level : <https://funduszeuepodlaskie.eu/>

COVID-19 pandemics has proven, that Polish financing institutions supported research on various levels -basic, clinical research, innovation projects with funds reallocated to needed purposes

R&I actors, authorities and activated processes that are activated in case of a health threat

The information is not exhaustive and should be updated regularly

R&I actors, authorities and

ministries involved in case of an outbreak; mobilisation processes of research forces; (existing) national or regional structures that advise governments on R&I during emergencies; administrative procedures to diminish the administrative burden for researchers and funding administrations; assessment of research outputs produced during a crisis; incentives ensuring qualitative scientific dissemination during a crisis; mechanisms to identify promising therapies or medical products for pandemic preparedness that are in the pipeline; international scientific collaboration in case of an outbreak; other actors, authorities or processes

Name	Description	url
Agency for Health Technology Assessment and Tariff System (AOTMiT)	AOTMiT conducts HTA and involved in both scientific research and development activities in Poland and abroad.	https://www.aotm.gov.pl/en/
Agency for Medical Research (ABM)	ABM funds translational-applied, clinical studies, innovation-industry research. Actor involved for mobilisation processes of research forces, administrative procedures to diminish the administrative burden for researchers and funding administrations, incentives ensuring qualitative scientific dissemination during a crisis, mobilisation processes of research forces	https://www.abm.gov.pl/en
Chief Pharmaceutical Inspectorate (CPI)	CPI is involved in case of emergencies	https://www.gov.pl/web/chief-pharmaceutical-inspectorate
Chief Sanitary Inspectorate (CSI)	CSI is involved in case of emergencies	https://www.gov.pl/web/gis/glowny-inspektorat-sanitarny
Marshal's Office in Podlaskie	The regional Managing Authority - Marshal's Office in Podlaskie (one of the 16 regions) funds translational-applied, clinical studies, innovation-industry	https://funduszeupodlaskie.eu https://mapadotacji.gov.pl/projekty/763526/
Medical University of Bialystok		https://www.umb.edu.pl/en/
Medical University of Gdansk (MUG)		https://mug.edu.pl/
Medical University of Lodz		https://en.umed.pl/
Medical University of Lublin		https://umlub.pl/en/
Medical University of Silesia (SUM)		https://sum.edu.pl/en
Medical University of Warsaw (WUM)		https://ed.wum.edu.pl/
Medical University of Wroclaw		https://www.umw.edu.pl/en
Ministry of Education and Science		https://www.gov.pl/web/edukacja-i-nauka
Ministry of Health		https://www.gov.pl/web/zdrowie
National Center of Science (NCN)	NCN funds basic research.	https://ncn.gov.pl/?language=en
National Centre for Research and Development (NCBR)	NBCR funds translational-applied, innovation-industry research	https://www.gov.pl/web/ncbr-en
National Health Fund (NFZ)		https://www.nfz.gov.pl/
National Institute of Public Health (PZH)	National Institute of Public Health - National Institute of Hygiene National Institute of Research (NIPH-NIH NIR) in Polish Narodowy Instytut Zdrowia Publicznego – Państwowy Zakład Higieny Państwowy Instytut Badawczy (NIZP–PZH PIB) should be considered a leading institution in fast response to any epidemic and pandemic. Actor involved to advise the government and for mechanisms to identify promising therapies or medical products for pandemic preparedness that are in the pipeline	https://www.pzh.gov.pl/

Office for Registration of Medicinal Products, Medical Devices and Biocidal Products (URPL)	URPL provides scientific advice on conducting tests and studies necessary to demonstrate the quality, safety or efficacy of medicinal products for human use concerning qualitative, clinical, non-clinical aspects, supervision over the safety of the medicinal product or methodological issues in the scope of ongoing or planned studies.	https://www.gov.pl/web/urpl
Polish National Agency for Academic Exchange	Actor involved for international scientific collaboration in case of an outbreak, mobilisation processes of research forces	https://nawa.gov.pl/
Polish Society of Epidemiologists and Infectious Diseases Specialists	clinical studies	http://www.pteilchz.org.pl/
Voivodships (regions)	16 regions play a role in case of e health threat	https://portal.cor.europa.eu/divisionpowers/Pages/Poland-Public-health.aspx

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BE READY is responding to the call: HORIZON-HLTH-2021-DISEASE-04-06 “Building a European partnership for pandemic preparedness” under grant agreement 101057795. Starting date: 01.06.2022. | End Date 31.05.2025

BE READY PLUS is responding to the call: HORIZON-HLTH-2024-DISEASE-17 “Pandemic preparedness and response: Maintaining and enhancing the preparatory work for a co-funded European partnership for pandemic” under grant agreement 101195079. Starting date: 01.01.2025. | End Date 31.12.2025

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