Registration form

This is a registration form for Host Institutions wanting to establish a Dioscuri Centre of Scientific Excellence within Dioscuri 4 call.

Registration form for Polish research institution

1. Research institution data (name and address): Medical University of Bialystok, ul. Jana Kilinskiego 1, 15-089 Białystok, Poland
2. Type of research institution[1]:
    1) **higher education institution**
3. Head of the institution: prof. dr hab. Adam Krętowski, Rector
4. Contact information of designated person(s) for applicants and the NCN: first and last name, position, e-mail address, phone number, correspondence address: Maria Szlachta, Office for Development and Evaluation, maria.szlachta@umb.edu.pl, 85 686 5116, ul. Jana Kilińskiego 1, 15-089 Białystok, Poland
5. Research discipline in which the strong international position of the institution ensures establishing a Dioscuri Centre:

Life Sciences

Genetics, genomics

6. Description of important research achievements from the selected discipline from the last 5 years including a list of the most important publications, patents, other (*up to one page in A4 format*):

The Medical University of Bialystok ambitious plan is to transfer the principles of High-Definition Medicine (HD Medicine) to Poland. HD Medicine assumes a deeper understanding of the individual course of the disease of a given patient based on a detailed analysis of his/her clinical data, lifestyle, environmental conditions and studies of genome, microbiome, proteome and other large-scale analyzes.

MUB is uniquely predisposed to pursue such an objective. As one of the few centres in the world, MUB made a comprehensive effort to create organizational, logistic and research conditionings allowing to initiate strategic projects in lung cancer (several hundred patients who underwent genomic, metabolomics, proteomic and radiomic tests), cardiovascular diseases (c. 1000 patients who underwent genomic and other large-scale studies), type 2 diabetes (c. 1000 patients included in genomic and metabolomic studies) and assessment of risk factors for civilization diseases (Białystok PLUS study including 10,000 residents of Bialystok subjected to extremely detailed clinical, genetic, biochemical and environmental analysis). We are aware that the only chance for

[1] As specified in "Addressees of the call"

Poland to achieve a competitive advantage in the field of HD Medicine and creating new artificial intelligence tools in medicine is to create a qualitative advantage that will decidedly distinguish us from other similar solutions created in developed countries. Without unique (in terms of data quality, not only the number of participants) databases there will not be any new, important solutions in the field of HD Medicine and artificial intelligence solutions that support it.

An extremely important part of our plan is to continue the unique work on creating the first in this part of Europe (and one of the few in the world), the most in-depth and detailed database created so far, called the Polish Database of HD Medicine - a platform for further activity of the only Centre for Artificial Intelligence in Medicine in Poland. That is why we are joining the DIOSCURI 4 initiative and welcoming DIOSCURI candidates at MUB.

Publications:

1. Whole genome sequencing puts forward hypotheses on metastasis evolution and therapy in colorectal cancer. Ishaque N, […] Balasubramanian GP, [...] Moniuszko M, Kozlowski M, Reszec J, Niklinski J, […] Allgayer H. Nat Commun. 2018 Nov 14;9(1):4782. doi: 10.1038/s41467-018-07041-z.
2. MicroRNAs as novel targets and tools in cancer therapy. Abba ML, […] Moniuszko M, Utikal J, Niklinski J, Allgayer H. Cancer Lett. 2017 Feb 28;387:84-94. doi: 10.1016/j.canlet.2016.03.043.
3. The Potential of Combined Immunotherapy and Antiangiogenesis for the Synergistic Treatment of Advanced NSCLC. Manegold C, […] Moniuszko M, […]. J Thorac Oncol. 2017 Feb;12(2):194-207. doi: 10.1016/j.jtho.2016.10.003.

Patents:

1. Patent application (P.421954) Sequence silencing the expression of the proline oxidase gene in MCF-7 cells granted by the Patent Office of the Republic of Poland on 20.06.2017.
2. "miRNA biomarkers for differential diagnosis of histopathological subtypes of non-small cell lung cancer" patent application (P.432011) filed on 29.11.2019 in the the Patent Office of the Republic of Poland and international patent application (PCT/PL2019/000113) filed on 30.11.2019.
3. Use of a block polymer comprising a block of poly(3-(methacryloylamino)propyl trimethylammonium chloride) (PMAPTAC) for the neutralization of heparin, no: 10052347 granted by the United States Patent and Trademark Office on 21.08.2018.

7. List of no more than 3 important research projects from the selected discipline awarded in national and international calls to the institution in the last 5 years (title, name of PI, source of funding, amount of funding):

- Research project "Development of Personalized Diagnostic of Malignant Tumors based on tumor heterogeneity and integrated genomic, transcriptomic, metabolomic and imaging PET/MRI analysis. Getting ready for Individualized Therapy", acronym: MOBIT,
Project coordinator: prof. dr hab. Jacek Nikliński
Total project value: 18,905,505 PLN
Name of the entity awarding the grant: National Centre for Research and Development

The rationale of this innovative project was to elucidate new promising biomarkers by using high-throughput technologies such as next-generation sequencing (NGS), metabolomics, proteomics, and advanced imaging techniques. Particular attention was paid to identify specific microRNAs and gene point mutations as biomarkers for diagnosis of early NSCLC (non-small cell lung cancer) and to detect specific microRNAs differentiating adenocarcinomas and squamous cell carcinomas. This approach may have the potential to identify genes that correspond to lung cancer progression or response to therapeutics. Patients with malignancies may benefit from new diagnostic tools. At the same time they are invaluable in all phases of clinical trials paving the way to novel, tailored therapies, and new guidelines and recommendations. PM in oncology will affect the healthcare costs by bringing new therapies precisely to the appropriate patients. The aim of the MOBIT project was also to draw interest and to invite national and international, private and public, preclinical and clinical initiatives to establish individualized and precise procedures for integrating novel diagnosis, therapies, and advanced imaging techniques. Crucial point was to enhance the MUB experts' knowledge and adopt national guidelines and recommendations for lung cancer early diagnosis and treatment in MUB Clinical Hospital.

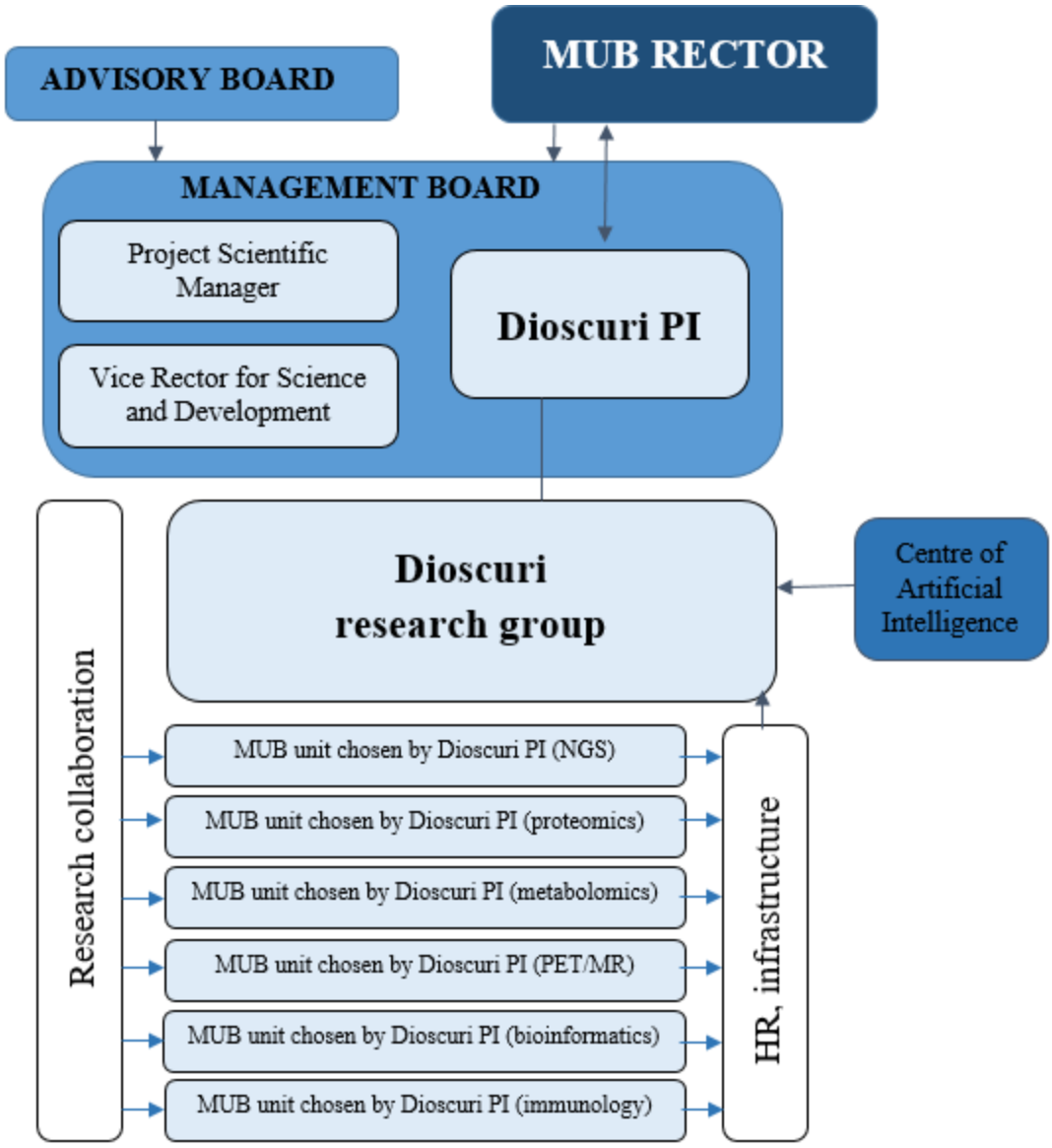
- Research project "Elucidation of the role of individual intramuscular lipid intermediates in fat-induced insulin resistance" within the framework of Operational Programme Smart Growth (POIR), Axis IV: Increasing the research and development potential, Action 4.4: Increasing the human resources potential of the B+R sector, TEAM program;
Project coordinator: prof. dr hab. Agnieszka Błachnio-Zabielska,
Total project value: 3,246,620 PLN
Name of the entity awarding the grant: Foundation for Polish Science

- Research project entitled "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 COVID-19" funded within Fast-track in the fight against COVID-19 implemented in cooperation with IMAGENE.ME SA and the Institute of Tuberculosis and Lung Diseases in Warsaw
Project coordinator: prof. dr hab. Marcin Moniuszko
Total project value: 4,419,000 PLN
Name of the entity awarding the grant: Medical Research Agency

8. Description of the available laboratory and office space for the Dioscuri Centre (*up to one page in A4 format*):

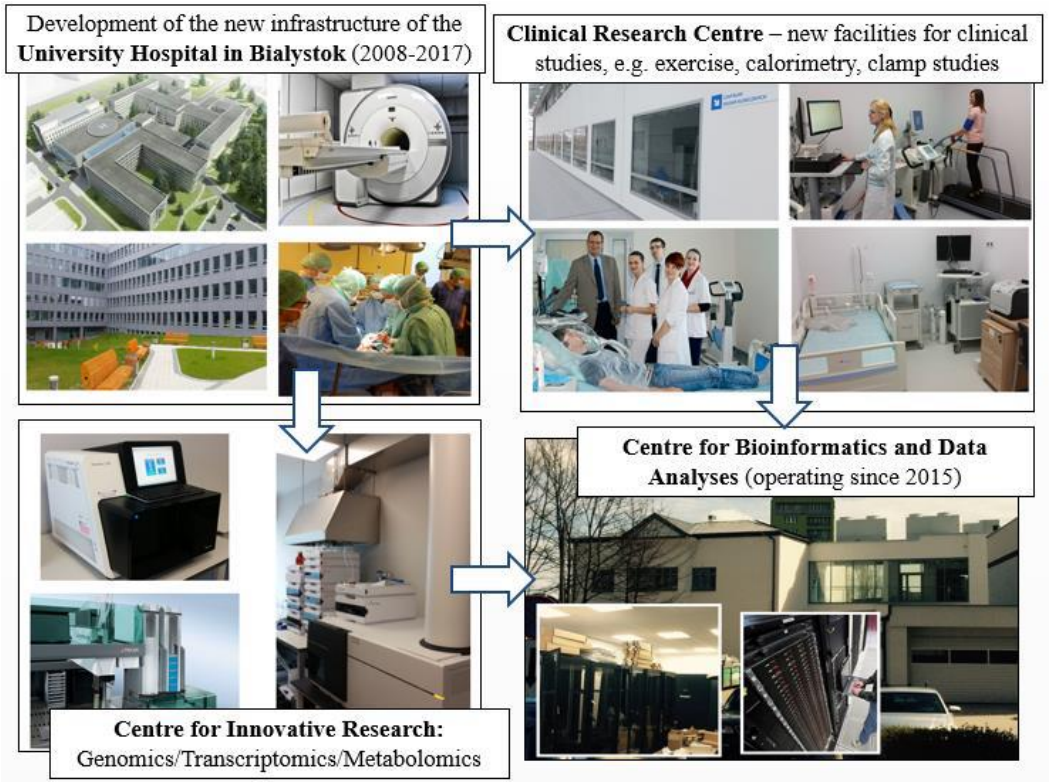
Dioscuri Centre will have an access to the infrastructure of the most leading MUB scientific centres, namely: Clinical Research Centre, Center of Experimental Medicine, Department of Regenerative Medicine and Immune Regulation, Department of Medical Pathomorphology, Centre for Bioinformatics and Data Analysis and Department of Pharmaceutical and Biopharmaceutical Analysis and others. Modern office space with all convenient facilities will be available at MUB campus for the Dioscuri Centre.

Dioscuri Centre organisational structure:


ADVISORY BOARD
MUB RECTOR
MANAGEMENT BOARD
Project Scientific Manager
Vice Rector for Science and Development
Dioscuri PI
Dioscuri research group
Centre of Artificial Intelligence
Research collaboration
MUB unit chosen by Dioscuri PI (NGS)
MUB unit chosen by Dioscuri PI (proteomics)
MUB unit chosen by Dioscuri PI (metabolomics)
MUB unit chosen by Dioscuri PI (PET/MR)
MUB unit chosen by Dioscuri PI (bioinformatics)
MUB unit chosen by Dioscuri PI (immunology)
HR, infrastructure

9. List of the available research equipment for the Dioscuri Centre:

The University offers very modern infrastructure for scientific research. The Center of Experimental Medicine is the most advanced center specialized in managing an animal laboratory and conducting experimental studies on laboratory animals. It provides a unique base for basic research and preclinical studies for national and international entities. It obtained the Good Laboratory Practice (GLP) certificate to conduct experimental research on animals in the fields of toxicity studies and pharmacokinetic studies. The Euroregional Laboratory of Pharmaceutical Analysis is the first facility in the country that possesses the competence to control drugs and formulations derived from cross-border exchange and to provide qualitative and quantitative evaluation of toxic substances in medicinal preparations, food and biological material. The Euroregional Centre of Pharmacy is a highly specialized pharmaceutical-analytical unit, which introduces modern research techniques to the daily scientific work. ECP conducts research in collaboration with various national and international centers that involves synthetic and natural drug discoveries, mechanism evaluation of drug action, toxicity profiling and pharmacokinetic-pharmacodynamic drug(s) technology. The Clinical Research Center (opened in April 2015) is a facility for clinical research in the area of metabolic, cardiovascular, neurodegenerative diseases and oncology - the project funded by the Polish Government as a part of "Reconstruction and Development of the University Hospital in Bialystok" (total budget 118 million EUR). It possesses equipment for the high-throughput genomics/transcriptomics (HiSeq 4000), proteomics and metabolomics (Orbitrap MS) analyses (7.5 million EUR). The Centre for Bioinformatics and Data Analysis (opened in November 2015) equipped in HPC cluster (4.5 million EUR). The Laboratory of Molecular Imaging and Technology Transfer – an SME company, owned and run by the MUB at the Bialystok Science and Technology Park (BSTP) offering the most modern PET-MRI hybrid for molecular imaging.



10. List of the additional benefits (other than listed in call text) that the Institution declares to provide for the Dioscuri Centre (i.e.: additional funds, personal benefits, other) (*up to one page in A4 format*):

MUB will employ the Dioscuri PI on a fixed-term employment contract as an academic teacher/researcher, without teaching duties. He/she would hold a position of the Head of the Dioscuri Centre, which will further allow him/her to freely apply for research funding in order to develop and raise the level of research excellence of the research group and MUB, to successfully compete at international level and help close the research gap.

MUB offers:

- Group leader position (professor level) on an initially 5-year appointment with the possibility of extension, subject to external merit-based evaluation
- Research independence
- Access to state-of-the-art research infrastructure
- Sufficient laboratory space for the Dioscuri Centre
- Full technical, administrative, and organizational support from MUB
- Additional annual salary for the Dioscuri PI and the team
- Possibility to apply for social funds (financing: vacations, children's vacations, cultural, educational, sport, recreation and tourism activities)

Working conditions proposed for the Dioscuri PI and Dioscuri research team are in line with the principles of the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers, as MUB is implementing Human Resources Strategy for Researchers including provisions of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. Working conditions inscribed in Charter and Code are very attractive for the researchers, and constitute a very high standard compared to common working conditions in Poland. What is more, working conditions and remuneration of ESRs in the project are far more attractive than working conditions in the Podlasie region, where Bialystok is located, and the whole country.

International networking will be supported at the institutional level by encouraging mobility through conferences, short research visits and trainings. Research excellence will be secured by a combination of new facilities and progressive individuals. Thanks to the workshops organized by the MUB's Technology Transfer Office, the researchers of the Dioscuri Centre will have greater exposure to industry and other relevant employment sectors in order to get an idea on what kind of priorities are set in a company in comparison to academic bodies and to show that high-quality research has an essential role also in the private sector. Increased attractiveness of the institution and the scientific environment to internationally excellent and mobile researchers will also be a huge benefit for MUB employees.

There will be a strong emphasis on establishing a competitive grant supporting team. This will be achieved through regular exposure of Dioscuri group to a broad selection of international grant application types, professional development of grant managers, and through working with scientists to improve their grant writing skills. Moreover, a dedicated grant manager capable of supporting the scientists in finding suitable calls will be appointed. With the increased capacity of our grant supporting system, the newly established strategic partnerships and the continuous transfer of knowledge from German partner together with the excellent research will guarantee that successful participation in internationally competitive funding programmes.

11. Other information about the internationalisation of the research institution, international researchers employed at the institution, the availability of English language seminars etc. (*up to one page in A4 format*):

- strong and long-lasting cooperation with major research centers in the world (i.a.: Heidelberg University, Germany; San Pablo University in Madrid, Spain; National Cancer Institute in Bethesda, USA; Mayo Clinic, USA; University of Pennsylvania, USA; INSERM France; University of Zürich, Switzerland; University of Copenhagen, Denmark; Hasselt University, Belgium; China Agricultural University, China) and with international companies (Indivumed GmbH in the field of personalized oncology),
- joint projects in the Center of Innovative Research (CEMBIO Madrid, University of Hasselt), including one acquired within Horizon 2020 EU Framework Programme,
- a scientific network with foreign scientists, supervisors and experts, currently involved in the implementation of the unique PhD programme financed by Horizon 2020 Framework Programme, titled "International Interdisciplinary PhD studies in Biomedical Research and Biostatistics" acronym ImPRESS 754432.
- experience in international, open, transparent and merit-based recruitment of 15 doctoral students of the International PhD Studies in Biomedical Research and Biostatistics and experience in attracting and maintaining promising and high quality, international human resources; Marie Skłodowska-Curie fellows who come from all over the world, Asia, America, Africa and Europe were recruited in 2018 for 4 years. They are both PhD students and university's employees.
- broad network of visiting professors from world-renowned centres, who regularly give visiting lectures and seminars in English (recently in an online formula), translating into scientific and business relationships
- an extensive cooperation in the field of scientific research: according to Web of Science, 21.7% of publications were published in cooperation with international centers (2013-2017),
- an active operation of the International Cooperation Office, MUB Welcome Centre and adoption of the MUB Internationalization Strategy. MUB Welcome Centre is a comprehensive service for foreign students, PhD students and academic staff. They are able to receive professional help regarding their functioning at the University and in Bialystok. The skilful Welcome Centre staff help to solve problems connected with studying or working at the University, but also related to everyday life, such as renting an apartment or official issues. Welcome Centre employees are fluent in English, have participated in specialist training courses related to servicing foreign students, international cooperation workshops, intercultural communication workshops, as well as specialized English workshops. Welcome Centre offers assistance in issues such as: how to move around the university; how to settle matters in the office, when no one can communicate in English; dealing with various matters at the University (advising where to go, who to ask, helping with translation if the employee doesn't speak English; in what district it is good to rent an apartment to conveniently reach the campus; opening a bank account; scheduling and/or accompanying a doctor's appointment if there's need for translation.
- MUB website run in 8 languages (including English, German, Swedish, Norwegian, Spanish),
- myMUB smartphone app that is meant to facilitate the functioning and acclimatization of people from abroad at our University. myMUB is completely free. It includes modules such as "About MUB", "Campus" – an interactive map facilitating moving around the University, "Guide", "Schedule", "Białystok", "Exchange Rate" and others.