APPROVED

by the protocol of the Organizing Committee of the International Olympiad of the Association of Educational Institutions of Higher Education "Global Universities" for graduate applicants for the degree of candidate of Science dated June 20, 2023 No. 1-z

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| University | Sechenov University |
| Level of English language proficiency | upper intermediate |
| The direction of training for which the graduate student will be accepted | 3.02 Clinical medicine. CARDIAC & CARDIOVASCULAR SYSTEMS |
| Code of the field of study for which the graduate student will be accepted | 3.02 Clinical medicine. CARDIAC & CARDIOVASCULAR SYSTEMS |
| List of research projects of a potential supervisor (participation/guidance) | 1. Development of a system for identifying high-risk groups among patients with hypertension using proton mass spectrometry of exhaled air;  2. Development of classifiers for intelligent systems for predicting recurrent myocardial infarction;  3. Development of an automated system for analyzing fundus images in patients with hypertension for classification and prediction of vascular pathology;  4. Development of methodological foundations for constructing a system for intelligent analysis of cardiological observation results;  5. Development of methodological, algorithmic support and experimental studies of an automated system for analyzing fundus images in patients with hypertension;  6. Development of methods for remote diagnosis of diastolic dysfunction;  7. Development of a comprehensive system of automated image processing tools (computer and magnetic resonance imaging) for diagnosis and risk stratification of coronary heart disease;  8. Development of a system for remote assessment of left ventricular systolic function in coronary heart disease.  **Monographs:**   1. COMPUTATIONAL MODELING OF SEVERAL STENOSES IN THE CAROTID ARTERIES   Simakov S.S., Gamilov T.M., Kopylov F.Yu.  R. Mondaini (ed.) Trends in Biomathematics: Modeling, Optimization and Computational Problems. Springer. ISSN 978-3-319-91092-5; 2018; pp. 301-312.   1. Training manual. Chronic heart failure. Sechenov University Publishing House, Moscow, Russia 2023. 2. Training manual. Acute coronary syndrome. Sechenov University Publishing House, Moscow, Russia 2023. 3. Training manual. Arterial hypertension.   Sechenov University Publishing House, Moscow, Russia 2020.  **Grants:**   1. 1. Expression of miRNA in stable and unstable atherosclerotic plaques and comparison with the level of miRNA in peripheral blood.    1. RFBR 2016-2019. 2. 2. The role of regulatory RNA in assessing the instability of atherosclerotic plaques in the coronary arteries.    1. RFBR 2018-2019. 3. 3. Prediction of the form of atrial fibrillation and adherence to therapy based on assessments of initial mental disorders, subjective correlates of the disease, and methods of mathematical simulation.    1. COMFI RFBR 2019-2020. 4. 4. Assessment of the impact of anxiety disorders on adherence to anticoagulant therapy and quality of life in patients with paroxysmal atrial fibrillation.    1. COMFI RFBR 2019-2020. 5. Study of the effect of mercury and bivalent metals on obesity and obesity-associated disorders of iron metabolism.    1. MNT\_a 20-515-S52003. RFBR 2019-2020. 6. Predicting the risk of developing arrhythmias in the transplanted heart using gene expression analysis and personalized mathematical models.    1. RFBR 2019-2020. 7. Algorithms of "spoken intelligence" in the creation of medical records of a personal electronic medical record (medical history).    1. RFBR 2019-2022. 8. Intra-university grant “Non-invasive assessment of the anatomy and structure of atherosclerotic plaque in patients with coronary heart disease using CT coronary angiography.    1. Sechenov University. 2018-2019. |
| List of possible research topics | 1. Telemedicine and e-health. 2. Mathematical modeling in biomedicine. 3. Analysis of exhaled air using proton mass spectrometry. |
| https://www.sechenov.ru/upload/iblock/6c0/Kopylov_foto_na-rabote.jpg  Research supervisor:  Philippe Yu. Kopylov,  Doctor of medical Science, professor (Sechenov University) | Title (area of research of the supervisor in one phrase).  Topic: Personalized Cardiology. |
| Supervisor’s research interests (более детальное описание научных интересов): Philippe Kopylov is currently director of Institute for clinical medicine and professor (Cardiology department) at I.M. Sechenov First Moscow State Medical University, Russia. He received his Ph.D. in Clinical Cardiology at I.M. Sechenov First Moscow State Medical University in 2003. Since then, he has been working at Department of Preventive and emergency cardiology as Assistant Professor (since 2003), Associate Professor (since 2007), and Professor (since 2011). At present, he also serves as principal investigator of 8 doctoral dissertations and 4 international clinical trials. His main research interests include mathematical modeling of cardiovascular hemodynamics and cardiovascular physiology, genetics in cardiology, precondition in cardiology, psychocardiology, eHealth and mHealth. He is an author of over 163 journal and conference papers. |
| Research highlights:   * productive experience of scientific supervising of foreign graduate students * significant experience of scientific interaction with colleagues from the Sechenov University and other Russian and foreign organizations * possible financial support of a graduate student at the expense of a scientific grant (if any) |
| Supervisor’s specific requirements:   * knowledge and experience in bioinformatics * knowledge and experience in statistical analysis of biomedical data * academic writing skills, the experience in publication activity |
| * Supervisor’s main publications (indicate the total number of publications in journals indexed by Web of Science, Scopus, RSCI over the past 5 years, write up to 5 most significant publications):   Web of Science – 65 publications;  Scopus – 107 publications;  RSCI – 163 publications.  Five most significant publications:   1. Daria Gognieva , Nelly Vishnyakova, Yulia Mitina, (...), Hugo Saner, Philipp Kopylov. Remote Screening for Atrial Fibrillation by a Federal Cardiac Monitoring System in Primary Care Patients in Russia: Results from the Prospective Interventional Multicenter FECAS-AFS Study. 2022 Global Heart 17(1), p.4. http://doi.org/10.5334/gh.1057 (Q1). 2. Bestavashvili A, Glazachev O, Bestavashvili A, Suvorov A, Zhang Y, Zhang X, Rozhkov A, Kuznetsova N, Pavlov C, Glushenkov D, Kopylov P. Intermittent Hypoxic-Hyperoxic Exposures Effects in Patients with Metabolic Syndrome: Correction of Cardiovascular and Metabolic Profile. Biomedicines. 2022; 10(3):566. https://doi.org/10.3390/biomedicines10030566 (Q1). 3. The CAPACITY-COVID Collaborative Consortium and LEOSS Study Group, Clinical presentation, disease course, and outcome of COVID-19 in hospitalized patients with and without pre-existing cardiac disease: a cohort study across 18 countries, European Heart Journal, Volume 43, Issue 11, 14 March 2022, Pages 1104–1120, https://doi.org/10.1093/eurheartj/ehab656 (Q1). 4. Kuznetsova, N., Sagirova, Z., Suvorov, A., Chomakhidze, P., Kopylov, P. A screening method for predicting left ventricular dysfunction based on spectral analysis of a single-channel electrocardiogram using machine learning algorithms. Biomedical Signal Processing and Controlthis link is disabled, 2023, 86, 105219 <http://dx.doi.org/10.2139/ssrn.4361180> (Q1). 5. Biakina, O., Mitina, Y., Gognieva, D., Syrkin, A., Kopylov P. DUOX1 Gene Missense Mutation Confers Susceptibility on Type 2 Amiodarone-Induced Thyrotoxicosis. International Journal of Molecular Sciencesthis link is disabled, 2023, 24(4), 4016 <https://doi.org/10.3390/ijms24044016> (Q1). |
|  | Results of intellectual activity:   1. 2021621618 “Database for determining blood pressure using a portable single-channel electrocardiogram monitor with photoplethysmography function,” 2021, Moscow. 2. 2021621697 “Database for determining left ventricular diastolic dysfunction by analyzing a single-channel electrocardiogram and pulse wave parameters,” 2021, Moscow. 3. 2021621923 “Database for determining left ventricular systolic dysfunction by analyzing a single-channel electrocardiogram and pulse wave parameters,” 2021, Moscow. 4. 2021621712 “Comparative characteristics of coronary agnography data with contrast, invasive measurement of fractional blood flow reserve and the calculated index “CT FFRC 1-D (ST FFRC 1-D)”" in patients with coronary heart disease", 2021, Moscow. 5. A program for cuffless determination of blood pressure using a portable single-channel electrocardiogram monitor with photoplethysmography function. No. 2022680493. , 2022, Moscow. 6. A program for determining left ventricular systolic dysfunction by analyzing a single-channel electrocardiogram and pulse wave parameters. No. 2022680844. , 2022, Moscow. 7. “Database of patients with pharmacogenetics of clopidogrel”, 2022. No. 2022621763, 2022, Moscow. |