

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 17, 2022 No. 2-z

The structure of the scientific profile (portfolio) of potential scientific supervisors of the participants of the International Olympiad of the Association "Global Universities" on the track of postgraduate studies in 2022-2023.

University	ФГАОУ ВО Первый МГМУ им. И.М. Сеченова Минздрава России (Сеченовский Университет)
Level of English language proficiency	B2
The direction of training for which the graduate student will be accepted	3.02 BA, ANESTHESIOLOGY DS, CRITICAL CARE MEDICINE
List of research projects of a potential supervisor (participation/guidance)	1. Remote Ischemic preconditioning for renal protection against Ischemia-Reperfusion Injury in cardiac surgery 2. Hypoxic and Hyperoxic Preconditioning for multiorgan protection against Ischemia-Reperfusion Injury in patients undergoing cardiac surgery with Cardiopulmonary Bypass
List of possible research topics	1. Endothelial dysfunction and oxygen dys/balance as a causes of multiorgan dysfunction after cardiac surgery 2. Right heart dys/function and protection against ischemia-reperfusion injury during cardiac surgery 3. Nitric oxide for multiorgan protection when added to the cardiopulmonary bypass circuit during cardiac surgery 4. Nitric oxide for kidney protection after cardiac surgery 5. Nitric oxide for intestinal protection against Ischemia-Reperfusion Injury 6. Hypoxic-hyperoxic preconditioning for neuroprotection in perioperative period 7. Exercise-induced respiratory and metabolic adaptation to stress based on hypoxic, hyperoxic and nitric oxide gas mixtures (as possible protective agents); preventing of cognitive, myocardial, kidney, intestinal dysfunction
Research supervisor:	Заголовок (направление международной карты науки, соответствующее области исследования)

Irina A. Mandel,
Candidate of Science
(Academician E. N. Meshalkin
Novosibirsk Research Institute of
Circulatory Pathology for the
Ministry of Health of the Russian
Federation)

Supervisor's research interests (более детальное описание научных интересов):

1. Mechanisms of organ damage, endothelial dysfunction and oxygen dys/balance as a causes of multiorgan dysfunction after surgery
2. Right heart dys/function and protection against ischemia-reperfusion injury during cardiosurgery
3. Exercise-induced respiratory and metabolic adaptation to stress based on hypoxic, hyperoxic and nitric oxide gas mixtures (as possible protective agents); preventing of cognitive, myocardial, kidney, intestinal dysfunction

4.

Research highlights (при наличии):

Необходимо указать отличительные особенности данной программы, которые бы выделяли её перед остальными. (Использование уникального оборудования, взаимодействие с зарубежными учеными и исследовательскими центрами, финансовая поддержка аспиранта и т.д.)

Scientific research in the field of cardiac surgery

Supervisor's specific requirements:

- Biomedical statistics

Supervisor's main publications (28 публикаций в журналах, индексируемых Web of Science, Scopus, RSCI за последние 5 лет, написать до 5 наиболее значимых публикаций с указанием ВЫХОДНЫХ ДАННЫХ):

- *Influence of Hypoxic and Hyperoxic Preconditioning on Endothelial Function in a Model of Myocardial Ischemia-Reperfusion Injury with Cardiopulmonary Bypass (Experimental Study)*. Mandel, I.A.; Podoksenov, Y.K.; Suhodolo, I.V.; An, D.A.; Mikheev, S.L.; Podoksenov, A.Y.; Svirko, Y.S.; Gusakova, A.M.; Shipulin, V.M.; Yavorovskiy, A.G. **International Journal of Molecular Sciences** 2020 Jul 27;21(15):E5336. doi: 10.3390/ijms21155336. PMID: 32727110
- *Nitric oxide provides myocardial protection when added to the cardiopulmonary bypass circuit during cardiac surgery: Randomized trial* / Kamenshchikov N.O., Mandel I.A., Podoksenov Y.K., Svirko Y.S., Lomivorotov V.V., Mikheev S.L., Kozlov B.N., Shipulin V.M., Nenakhova A.A., Anfinogenova Y.J. // **Journal of Thoracic and Cardiovascular Surgery** 2019; 157: 2328–2336. DOI: <https://doi.org/10.1016/j.jtcvs.2018.08.117>
- *Predictors of the severe disease of patients admitted to an ICU with COVID-19*. T. Klypa; M. Bychinin; I. Mandel; S. Andreichenko¹; A. Minec¹; N. Kolyshkina²; A. Troitsky **Intensive Care Medicine Experimental** (2020) European Society of Intensive Care Medicine (ESICM) 2020 8:73. P. 547 <https://doi.org/10.1186/s40635-020-00354-8>
- *Low Circulating Vitamin D in Intensive Care Unit-Admitted COVID-19 Patients as a Predictor of Negative Outcomes*. Bychinin MV, Klypa TV, Mandel IA, Andreichenko SA, Baklaushev VP, Yusubalieva GM, Kolyshkina NA, Troitsky AV. **Journal of Nutrition** 2021 Aug 7;151(8):2199-2205. doi: 10.1093/jn/nxab107. PMID: 33982128; PMCID: PMC8194597.
- *Potential for the lung recruitment and the risk of lung overdistension during 21 days of mechanical ventilation in patients with COVID-19 after noninvasive ventilation failure: the COVID-VENT observational trial* / Andrey I. Yaroshetskiy, Sergey N. Avdeev, Mikhail E. Politov, Pavel V. Nogtev, Victoria G. Beresneva, Yury D. Sorokin, Vasily D. Konanykhin, Anna P. Krasnoshchekova, Zamira M. Merzhoeva, Natalia A. Tsareva, Natalia V. Trushenko, Irina A. Mandel and Andrey G. Yavorovskiy **BMC Anesthesiology** (2022) 22:59 <https://doi.org/10.1186/s12871-022-01600-0>

Results of intellectual activity (при наличии)

(Наиболее значимые результаты интеллектуальной деятельности)

- *Hypoxic and Hyperoxic Preconditioning for MultiOrgan Protection against Ischemia-Reperfusion Injury (Experimental and Clinical Trials)*
- *Nitric oxide for myocardial protection when added to the cardiopulmonary bypass circuit during cardiac surgery*
- *Predictors of the severe disease of ICU-admitted patients with COVID-19*