Brief information about the project

Title	**BR27198099 «Развитие интегративных научных исследований по нейронауке»**
Relevance	Strengthening the research potential of Kazakhstan with increased attention to integrative directions is the key to successful solution of strategic state tasks, which is reflected in the policy of systemic support of interdisciplinary research proclaimed by the government of Kazakhstan. Challenges of modernity such as inevitable increase in information and cognitive loads, steady growth of neurodegenerative and emotional-cognitive disorders determine the urgent need for the development of neuroscience in Kazakhstan. Neuroscience integrates the capabilities of different scientific branches to understand the mechanisms of the brain.
Goal	The goal of the program is to create and modernize the scientific infrastructure for neuroscience, integrating neurobiological, computer, cognitive and behavioral sciences to introduce brain research from molecular to systemic levels of organization of behavior and consciousness.
Tasks	The program involves the establishment of five laboratories: cognitive neuroscience, computational neuroscience, neurolinguistics, cellular neuroscience, and behavioral neuroscience; and the creation of facilities to process and store brain signal and behavioral data; application of machine learning and artificial intelligence to brain signals analysis in order to predict age-related brain changes as well as emotional and cognitive functions during development, and to identify parameters of brain dysfunctions; development of methodology of longitudinal studies of structural and functional brain development; study of the effectiveness of innovative botulinum toxin in behavioral experiments with animals; developing methodology and conducting neurolinguistic studies; studying the effectiveness of neuro-training protocols for self-regulation of the brain functional state based on biofeedback; determining biomarkers of depressive state; mapping cognitive functions; study of brain functional states as differentiated levels; study of learning mechanisms; multilevel studies for biomarkers of neurodegenerative diseases.
Expected and Achieved Results	As a result of the project: - the brain research center will increase its potential by creating five research laboratories equipped with modern equipment; - research facilities for analyzing brain signals using machine learning and artificial intelligence algorithms will be created; - the characteristics of event related potential with sources reconstruction during task performance, BOLD-signal and connectivity of functional brain neural networks during resting state and during cognitive tasks will be described; - predictive parameters of brain development will be identified by using algorithms of nonlinear analysis, machine learning and artificial intelligence; - methodology of longitudinal studies of structural and functional brain development and brain aging will be described and started; - botulinum toxin in application to chronic pain will be tested in animal models; - neurolinguistic studies will be initiated; - protocols of neurotraining for optimization of brain function, including cognitive functions and emotional state improvement; - their effectiveness will be evaluated; - studies in cognitive functions mapping will be carried out; mechanisms of learning will be investigated; - functional states of the brain during emotional and cognitive tasks will be studied; - study on neurodegenerative deseases (multiple sclerosis; Parkinson's syndrome, Alzheimer's disease) will be initiated. Based on the outcomes of the program, the following publications and intellectual property results are expected: 1. At least 13 (thirteen) articles and/or reviews in peer-reviewed scientific journals within the program's research field that are ranked in the first or second quartile by impact factor in the Web of Science database and/or have a CiteScore percentile of no less than 50 (fifty) in the Scopus database.

	2. At least 15 (fifteen) articles published in journals recommended by the Committee for Quality Assurance in the Sphere of Science and Higher Education. 3. At least 1 (one) monograph or textbook published by foreign and/or Kazakhstani publishers recommended by the Academic Council and/or the Scientific and Technical Council of the applicant organization. 4. At least 5 (five) patents registered with foreign patent offices (European, American, Japanese), or at least 4 (four) foreign or international patents indexed in the Derwent Innovations Index (Web of Science, Clarivate Analytics), or at least 10 (ten) intellectual property objects (patents; for IT-related applications—copyright certificates) registered with the National Institute of Intellectual Property of the Republic of Kazakhstan. 5. At least 3 (three) PhD dissertations successfully defended.
Names and Surnames of Research Group Members with Their Identifiers (Scopus Author ID, Researcher ID, ORCID, if available) and Links to Corresponding Profiles	1. Zholdassova Manzura, PhD, Project Supervisor H-index – 3. Web of Science Researcher ID - ABF-2728-2021 https://www.webofse.cociencm/wos/author/record/2431494 ORCID: 0000-0002-8186-9650 https://orcid.org/0000-0002-8186-9650 Scopus ID: 57211453898 https://www.scopus.com/authid/detail.uri?authorId=57211453898 2. Kustubayeva Almira, Candidate of Biological Sciences, Professor H-index – 9. Web of Science Researcher ID - O-3664-2017 https://www.webofscience.com/wos/author/record/1415099 ORCID: 0000-0001-6575-6288 https://orcid.org/0000-0001-6575-6288 Scopus ID: 48861267200 https://www.scopus.com/authid/detail.uri?authorId=48861267200 3. Kamzanova Altyngul, PhD H-index – 5. Web of Science Researcher ID - N-9752-2014 https://www.webofscience.com/wos/author/record/307147 ORCID: 0000-0002-7097-3460 https://orcid.org/0000-0002-7097-3460 Scopus ID: 48861537900 https://www.scopus.com/authid/detail.uri?authorId=48861537900 4. Gerald Matthews, Professor H-index – 66 ORCID: 0000-0001-8373-6918 https://orcid.org/0000-0001-8373-6918 Scopus ID: 7201422023 https://www.scopus.com/authid/detail.uri?authorId=7201422023 5. Davletov Bazbek, Phd, Emeritus Professor H-index – 43 ORCID: 0000-0003-4658-3275 https://orcid.org/0000-0003-4658-3275 Scopus ID: 7003987565 https://www.scopus.com/authid/detail.uri?authorId=7003987565 6. Giniatullin Rashid Askhatovich, доктор медицинских наук, профессор H-index – 42 Web of Science Researcher ID - Y-9687-2018 https://www.webofscience.com/wos/author/record/664951 ORCID: 0000-0002-1580-6280 - https://orcid.org/0000-0002-1580-6280 Scopus ID: 7004479334 https://www.scopus.com/authid/detail.uri?authorId=7004479334 7. Datkhabayeva Gaukhar, Candidate of Biological Sciences H-index – 2 ORCID: 0000-0003-0223-5826 https://orcid.org/0000-0003-0223-5826 Scopus ID: 57206207741 https://www.scopus.com/authid/detail.uri?authorId=57206207741 8. Ibrayeva Zhanar, Doctor of Philology, Associate ProfessorH-index – 1 ORCID: 0000-0001-9094-3034 https://orcid.org/0000-0001-9094-3034 Scopus ID: 56655155800 https://www.scopus.com/authid/detail.uri?authorId=57220045882 9. Karimova Altynay, Candidate of Medical Sciences H-index – 7

	Web of Science Researcher ID - ABA-8494-2021 https://www.webofscience.com/wos/author/record/2393528 ORCID: 0000-0002-6249-1998 https://orcid.org/0000-0002-6249-1998 Scopus ID: 57210634259 https://www.scopus.com/authid/detail.uri?authorId=57210634259 10. Tormanova Anel, PhD in Biological Sciences ORCID: 0000-0002-4251-3192 https://orcid.org/0000-0002-4251-3192 Scopus ID: 58965502900 https://www.scopus.com/authid/detail.uri?authorId=58965502900 11. Yerdenova Meruyert, Master of Pedagogical Sciences, PhD Candidate H-index – 1 ORCID: 0000-0002-0636-2649 https://orcid.org/0000-0002-0636-2649 Scopus ID: 58076561100 no data 12. Kulbayeva Marzhan, Candidate of Biological Sciences H-index – 8 ORCID: 0000-0002-5622-8421 https://orcid.org/0000-0002-5622-8421 Scopus ID: 57213156993 https://www.scopus.com/authid/detail.uri?authorId=57213156993 13. Arman Diana, PhD H-index - 2 Scopus Author ID: 57055918000 https://www.scopus.com/authid/detail.uri?authorId=57055918000 14. Melnikov Mikhail Yevgenievitch, PhD in Biological Sciences H-index - 7 Scopus Author ID 57226345921 https://www.scopus.com/authid/detail.uri?authorId=57226345921 ORCID 0000-0003-4957-1958 https://orcid.org/0000-0003-4957-1958 WoS Researcher ID D-3810-2018 https://www.webofscience.com/wos/author/record/1167274 15. Zhantleuova Aisha, PhD Candidate ORCID 0009-0001-2879-5648 https://orcid.org/0009-0001-2879-5648 16. Zhaksylykkyzy Karlygash, PhD Candidate, Master ORCID 0000-0003-3657-5562 https://orcid.org/0000-0003-3657-5562 17. Kabenova Oxana, master, instructor ORCID 0000-0002-3511-7749 https://orcid.org/0000-0002-3511-7749 18. Iskakova Dina, PhD Candidate ORCID: 0000-0001-75932724 https://orcid.org/0000-0001-7593-2724 19. Zhulduzbayev Ruslan, PhD Candidate, Master ORCID: 0009-0008-7881-4289 https://orcid.org/0009-0008-7881-4289 20. Tassibekova Gauhar, PhD Candidate Researcher ID -9261-2023 ORCID 0000-0002-1301-6496 https://orcid.org/0000-0002-1301-6496 21. Mengdibay Daulet , PhD Candidate, Master ORCID: 0009-0001-8514-7233 https://orcid.org/0009-0001-8514-7233 22. Kalmagambetov Daniyar, PhD Candidate, Master ORCID: 0009-0002-3650-9100 https://orcid.org/0009-0002-3650-9100 23. Zhumakhanov Dauren , Master in Public Health ORCID: 0000-0002-6809-431X https://orcid.org/0000-0002-6809-431X 24. Baikatov Amir, Master in Cognitive Neuroscience ORCID: 0000-0001-9334-9516 https://orcid.org/0000-0001-9334-9516 25. Kazakbayeva Alzira, Master ORCID: 0009-0000-1906-7211 https://orcid.org/0009-0000-1906-7211 26. Shakhzadayev Rassul, Bachelor ORCID 0009-0005-1574-8040 https://orcid.org/0009-0005-1574-8040 27. Pak Alexandr, PhD ORCID 0000-0002-8685-9355 https://orcid.org/0000-0002-8685-9355 28. Ashirbay Aizhan, Master's Student, ORCID 0009-0001-5410-3027 https://orcid.org/0009-0001-5410-3027 29. Nusyupayeva Aigerim, Master, Master in Economic

Publications list with links to them	1. Жантлеуова А., Каримова А., Давлетов В. Новый непаралитический ботулинический нейротоксин типа А для лечения хронической боли в животных моделях боли // ВЕСТНИК Евразийского национального университета имени Л.Н. Гумилевана. Серия биологические науки. № №1(150), 2025. С.700-82. DOI: https://doi.org/10.32523/2616-7034-2025-150-1-70-82 https://bulbio.enu.kz/index.php/main/article/view/714/215 2. Yerdenova M.B., Datkhabayeva G.K., Zholdassova M.K., Kamzanova A.T., Sadvakassova Z.M., Bouzid A., Bhamidimarri P.M., Hamoudi R., Semenova E.A., Larin A.K., Kulemin N.A., Generozov E.V., Rees T., Kustubayeva A.M., Ahmetov I.I. Association Between Genetically Predicted Memory and Self-Reported Foreign Language Proficiency. Genes (Basel). 2025 May 17;16(5):589. doi: 10.3390/genes16050589. PMID: 40428411; PMCID: PMC12111700. P.1-11. Процентиль: 61; квартиль - Q2 https://www.mdpi.com/2073-4425/16/5/589 https://doi.org/10.3390/genes16050589
Information about the defense	Defended at least the 1st thesis for the PhD degree. Aisha Kanatovna Zhantleuova defended her PhD thesis in the specialty "8D05109 - Neuroscience". The Order of the Chairman of the Board-Rector Zh.Tuimebayeva No. 2576-used on 05/29/2025 https://farabi.university/science/dissertation-advice/21 https://www.youtube.com/live/cXd33uir20s?si=7j3mF0Tso9zWm2Br