

Research Institute of Genetic and Molecular Epidemiology (NII GME) was established on the basis of the decision of the Academic Council of Kursk State Medical University from 10.10.2016 in order to increase the efficiency of scientific research of the teaching staff and concentration on scientific platforms approved by the Ministry of Health of the Russian Federation. Research Institute of GME is a structural subdivision of KSMU, the main task of which is to perform world-class scientific research in the field of genetic and molecular epidemiology of socially significant diseases together with other subdivisions of KSMU.

The GME Research Institute includes three laboratories: genomic research, biochemical genetics and metabolomics, and the laboratory of statistical genetics and bioinformatics, good-equipped for world-class genetic and epidemiological research.

The GME Research Institute has a collection of biological samples obtained from more than 20,000 patients with various diseases. Today, the GME Research Institute conducts world-class genetic-epidemiological and pharmacogenetic studies, and the results are published in leading national and foreign scientific publications and are used to develop personalized approaches to the treatment and prevention of socially significant diseases.



RESEARCH INSTITUTE OF GENETIC AND MOLECULAR EPIDEMIOLOGY

WE INVITE SCIENTIFIC TEAMS
AND REPRESENTATIVES OF THE
MEDICAL COMMUNITY
FOR COOPERATION!

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МЕДИЦИНСКИЙ УНИВЕРСИТЕТ
KURSK STATE MEDICAL UNIVERSITY



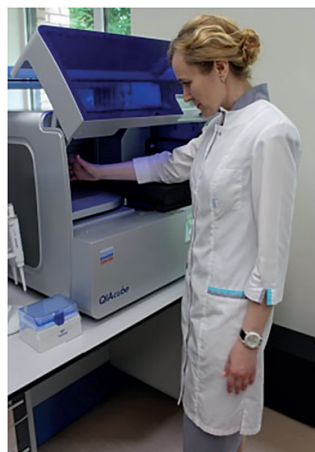
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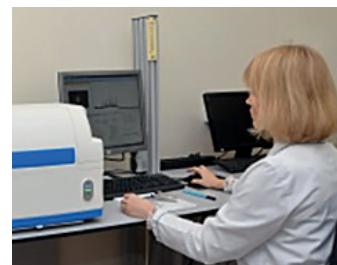
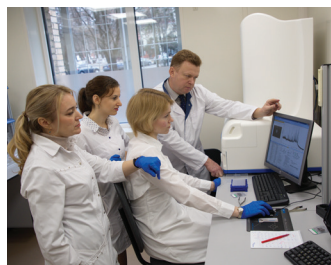
MAIN TASKS OF THE RESEARCH INSTITUTE GME:

- increase of quality and volume of scientific research fulfillment in KSMU;
- Increase of publication activity and international quotations of KSMU faculty in journals indexed by Web of Science and Scopus;
- increase of personnel scientific potential of KSMU;
- increase of grant activity of the teaching staff of KSMU;
- creation of the environment of knowledge generation and innovation development at the interface of medical genetics and clinical disciplines to increase the efficiency of scientific research in KSMU;
- increase in the volume of scientific research with leading foreign scientific and educational organizations;
- increase of international academic mobility of the teaching staff of KSMU;
- increase of the international rating of KSMU for the purpose of integration of the university into the world scientific and educational system.



LABORATORY METHODS OF RESEARCH AT THE RESEARCH INSTITUTE GME:

- Method of automatic isolation of nucleic acids and proteins;
- Real-time polymerase chain reaction (PCR-RV) method for genotyping DNA polymorphisms and analyzing gene expression;
- time-of-flight mass spectrometry (MALDI-TOF) method for full-scale genotyping and epigenetic analysis;
- DNA fragment analysis and determination of gene methylation status by pyrosequencing;
- automated biochemical analysis for a wide range of metabolites based on spectro-, fluoro- and chemiluminometry methods;
- Polymerase chain reaction (PCR) method with detection of amplification products by electrophoresis in agarose and polyacrylamide gels.



MAJOR ACHIEVEMENTS OF THE RESEARCH INSTITUTE GME:

The Research Institute has a collection of more than 20,000 DNA samples from patients with cerebral stroke, ischemic heart disease, hypertension, type 1 and type 2 diabetes mellitus, acute and chronic pancreatitis, peptic ulcer disease, bronchial asthma, chronic rhinosinusitis, psoriasis, adolescent idiopathic scoliosis, idiopathic male infertility, uterine myoma, colorectal cancer, patients with new coronavirus infection, anterior abdominal wall hernias, and healthy individuals.

FOR THE LAST FIVE YEARS:

- For the first time, a large-scale genetic and epidemiological study was conducted to assess the involvement of polymorphic variants of genes of enzymes of glutathione metabolism and pro-oxidant enzymes in the molecular mechanisms of development of type 2 diabetes mellitus and its complications.
- For the first time associations of type 2 diabetes mellitus with 11 polymorphic variants of 8 glutathione metabolism enzyme genes and 8 SNPs of 6 prooxidant enzyme genes, many of which have been successfully replicated in independent populations of the world, have been identified;
- For the first time, polymorphic variants of genes regulating protein folding and cellular response to unfolded proteins have been found to be a crucial part of the genetic predisposition to type 2 diabetes mellitus and vary significantly by sex, body mass index, and ethnicity of individuals;
- The pathogenetic role of Hero genes in the risk of ischemic stroke development was established for the first time in the world;
- The role of HSP70 family genes in protection against neurodegenerative diseases was analyzed;
- The role of epigenetic variability of genes of redox-regulation and biotransformation of xenobiotics in the mechanisms of formation of isolated and comorbid forms of cardio- and cerebrovascular pathology was established for the first time;
- The role of methylation of redox-regulation genes in peripheral blood cells as markers of the acute phase of ischemic stroke has been established for the first time;
- The role of polymorphism of detoxification genes (biotransformation of xenobiotics) in the formation of predisposition to arterial hypertension and colorectal cancer has been established.
- More than 165 papers have been published, 56 of which were published in journals included in the international databases WoS/Scopus.
- 7 patents for invention of methods of forecasting the risk of disease development have been obtained;
- 4 scientific projects financed by the Russian Science Foundation and TRC GEN genetic research fund of Trans Russhen CO;
- About 30-40 methods of genotyping of DNA polymorphisms by real-time PCR using TaqMan probes and IPlex technology are developed annually by the staff.