

## Lithuanian Academy of Sciences

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### **Pages from History**



A drawing of the building of the Lithuanian Academy of Sciences. Architect Mikhail Prozorov

In European history, the eighteenth century stands out as the age of popularisation of science, encyclopaedias, emergence of new forms of educational institutions, and of learned academies. Martynas Počobutas, a professor at Vilnius University, followed the spirit of the epoch and together with some of his colleagues developed a programme for the establishement of an academy in Vilnius. At that time their plans did not did not materialise and it was in the late nineteenth-early twentieth century, during the movement of national rebirth, that the idea of an academy of sciences was revived. It was nurtured by the founders of the Lithuanian Scientific Society, Dr. Jonas Basanavičius, Dr. Jonas Šliūpas, and others. Prominent intellectuals of independent Lithuania perceived an academy of sciences as an independent centre for scientific research and its organisation, as a symbol of the country's prestige. Due to various reasons the implementation of this project began only in 1939 when the Antanas Smetona Institute of Lithuanian Studies was established and the preparation of the statute of the Lithuanian Academy of Sciences was launched.

The Academy was founded on 16 January 1941 and Vincas Krėvė-Mickevičius was elected its first president. At the beginning it was the humanities that dominated the Lithuanian Academy of Sciences. Meanwhile, physics, mathematics, and some of the natural sciences gained impetus after the war when the Academy was re-established. The main research trends evolved, and widely known and globally recognised scientific results were achieved. The ideological climate in the Academy greatly depended on the competence of its presidents at that time. The contribution of Professor Juozas Matulis, who headed the Academy for 40 years, was truly significant.

The Lithuanian Academy of Sciences was among the first to declare its independence from the USSR Academy of Sciences in the autumn of 1989. At the time, it comprised 17 scientific research institutes and a number of auxiliary scientific and industrial enterprises. It had a staff of over 5,600 employees, including 2,000 scientists engaged in research.

On 12 February 1991, the Law of the Republic of Lithuania on Research and Studies was passed which changed the status of the Lithuanian Academy of Sciences. The law abolished the existing institutional attributes (the network of research institutes and supply undertakings, management of all research institutions in the country, and the like) and reorganised the Lithuanian Academy of Sciences into a personal academy. The research institutes that previously used to be part of the Academy's network became independent research institutions. Professor Juras Požela was the president of the Academy during this period of complex reorganisation.

From 1992 to 2003, the Lithuanian Academy of Sciences was headed by Professor Benediktas Juodka. This was the time of the search for and consolidation of new forms of activity and of expansion of international cooperation. In 1993, the new Statute of the Lithuanian Academy of Sciences, along with its new aims and objectives, was approved by the Seimas of the Republic of Lithuania.

Amendments to the Law on Higher Education and Research of the Republic of Lithuania resulted in yet another reorganisation of the Academy's Statute. According to the wording of the Statute approved by the Seimas of the Republic of Lithuania on 18 March 2003, the Academy was to consist of 40 full members (academicians), 60 corresponding members, 50 expert members, and an unlimited number of foreign members.

Professor Zenonas Rokus Rudzikas was the president of the Academy from 2003 to 2009. The new wording of the Law on Higher Education and Research of the Republic of Lithuania, which came into force on 30 April 2009, established the status of the Lithuanian Academy of Sciences as a state budgetary institution bringing together the most outstanding Lithuanian researchers and foreign scientists whose work links them to Lithuania.



The academic conference '11 March in the Scope of Historical Research' organised jointly with the Seimas of the Republic of Lithuania and Vilnius University was held in the Big Conference Hall of the Academy on 9 March 2005

From 2009 to 2018, the Academy was headed by Professor Valdemaras Razumas. On 19 May 2011, the Seimas of the Republic of Lithuania approved the new wording of the Statute of the Lithuanian Academy of Sciences, which changed the composition of the Academy members into full members, members emeriti, and foreign members. The Academy may have up to 120 full members, who become members emeriti at the age of 75. The number of members emeriti and foreign members is not limited. On 6 June 2017, the Seimas of the Republic of Lithuania passed a resolution that amended the Statute of the Lithuanian Academy of Sciences.

At present, the Lithuanian Academy of Sciences is a fully-fledged member of the global community of academies of sciences, of international and European organisations shaping research and research policies, which represents the interests of the Lithuanian research community. From 1 February 2018, the president of the Academy is Professor Jūras Banys.

#### The Mission of the Academy

#### JŪRAS BANYS

President of the Lithuanian Academy of Sciences

Looking from a global perspective, academies of sciences are not homogeneous. They differ in their aims, in methods of their activities, and in their importance within the system of studies and research of their countries. Still, the overall mission of all academies of sciences is focused on rallying the most outstanding researchers and undertaking initiatives that would enhance the country's well-being and scientific, social, cultural, and economic development. Academies are also united by traditional objectives: consistent encouragement of high-level studies and scientific research, cultivation of critical scientific thinking among the general public, nurturing of academic and scholarly freedom and the ethics of scientific research.

The Lithuanian Academy of Sciences carries out its mission by ensuring permanent and active propagation of education and research. This is achieved through a variety of forms: thematic conferences, meetings, seminars, and discussions. These are organised not only among the academy members but also jointly by the academy and other institutions of research and studies both domestically and abroad. The dispersion of education and research, which is crucial for progress, is always international and encompasses publishing.

Scientific deliberations are effective only when they are joined by all outstanding scientists in the country. For this reason, a number of aspects are important in the selection of academy members and in its activities. The key criterion in the selection of academy members is their research achievements. The academy must attract as many young, creative, and innovative researchers as possible. However, the initiative and creativity of the academy members, their experience in research organisation, dispersion of research results, and their expert experience are of no lesser importance. For the country's entire scientific elite to participate in the activities of the academy, it is necessary to expand cooperation between the members of the academy and those who are not its members yet are its genuine reserve.

Another important field of activity is the encouragement of talented researchers and of scientific research in every possible way. Nowadays, although



President Jūras Banys

members of the academy conduct research in independent universities and research centres, the academy and its members can have a significant impact on the country's research policies and development. Along with the commemorative, young researchers', and students' recognition prizes, the academy has instituted more measures stimulating the country's scientists and scientific research. Since 2004, the Lithuanian Academy of Sciences has coordinated the cooperation of the country's scientists with the European Organisation for Nuclear Research (CERN) and has promoted the participation of young researchers at the meetings of Nobel Prize laureates. Since 2010, the Academy has held a competition for 15 annual scholarships for the country's young researchers.

Provision of expertise and advice is the third sphere of the Academy's activities. Although at first sight it might appear that this is the most obvious and probably the most important function of the academy, it encompasses serious challenges to the independent and objective nature of science, for it is highly important to never violate the balance between academic freedom and responsibility.

International cooperation and maintaining of international relations is another highly important field. The academy has signed cooperation treaties with 27 foreign academies of sciences.

In 2018, the Lithuanian Academy of Sciences founded the Young Academy of the Lithuanian Academy of Sciences. There are over 40 Young Academies and Young Scientists' Associations around the world and they are united by the Global Young Academy founded in 2008. The Young Academy operates within the Lithuanian Academy of Sciences: a separate division has been established for its members with the aim of creating the best possible conditions for the development of their scientific and organisational work.

### Members of the Lithuanian Academy of Sciences (as of 8 November 2018)

The Lithuanian Academy of Sciences is a state budget institution that joins the most outstanding Lithuanian scientists and scholars and those whose work associates them with Lithuania. In exceptional cases, recognised artists and writers are elected as academy members as well. The members of the Lithuanian Academy of Sciences – the academicians – are full members, members emeriti, and foreign members. Each academician is also a member of one of the scientific divisions of the Lithuanian Academy of Sciences. Members of the academy are elected for life. When full members of the academy reach the age of 75, they become members emeriti.



Sign of the Member of the Lithuanian Academy of Sciences. Author Miglė Datkūnaitė

#### Full Members of the Lithuanian Academy of Sciences

Antanas Andrijauskas • Juozas Augutis • Vilijandas Bagdonavičius • Jūras Banys • Vytautas Basys • Vidmantas Bižokas • Grasilda Blažienė • Vilmantė Borutaitė • Vincas Būda • Vladas Algirdas Bumelis • Eugenijus Butkus • Raimondas Čiegis • Zenonas Dabkevičius • Darius Danusevičius • Viktorija Daujotytė-Pakerienė • Rūta Dubakienė • Pavelas Duchovskis • Gintautas Dzemyda • Algimantas Fedaravičius • Juozas Vidas Gražulevičius • Feliksas Ivanauskas • Vitalijus Janickis • Rimantas Jankauskas • Rūta Janonienė • Eugenijus Jovaiša • Rimantas Kačianauskas • Artūras Kaklauskas • Gintaris Kaklauskas • Algirdas Kaliatka • Vytautas Kaminskas • Aivaras Kareiva • Domas Kaunas • Kęstutis Kilkus • Saulius Klimašauskas • Arūnas Krotkus • Vaidutis Kučinskas • Zita Aušrelė Kučinskienė • Juozas Kulys • Genadijus Kulvietis • Limas Kupčinskas • Giedrius Antanas Kuprevičius • Aleksandras Laucevičius • Valdas Stanislovas Laurinavičius • Antanas Laurinčikas • Romas Lazutka • Remigijus Leipus • Ričardas Makuška •

Albertas Malinauskas • Eugenijus Manstavičius • Audrius Sigitas Maruška • Arvydas Virgilijus Matulionis • Jonas Mažeika • Liudas Mažeika • Valentinas Mikelėnas • Robert Mokrik • Gediminas Motuza Matuzevičius • Jonas Remigijus Naujalis • Evaldas Nekrašas • Vytautas Nekrošius • Gediminas Niaura • Eugenijus Norkus • Zenonas Norkus • Sergej Olenin • Vytautas Ostaševičius • Rolandas Palekas • Vygantas Paulauskas • Rimvydas Petrauskas • Konstantinas Pileckas • Alfas Pliūra • Povilas Poškas • Arvydas Povilaitis • Minvydas Kazys Ragulskis • Rimantas Ramanauskas • Arūnas Ramanavičius • Daiva Rastenytė • Valdemaras Razumas • Vytautas Ruzgas • Kestutis Sasnauskas • Antanas Sederevičius • Jūratė Sprindytė • Vidmantas Stanys • Kęstutis Strupas • Bonifacas Stundžia • Raimundas Šiaučiūnas • Virginijus Šikšnys • Marijus Arvydas Šliogeris • Gintautas Tamulaitis • Sigitas Tamulevičius • Eugenijus Ušpuras • Gediminas Valkiūnas • Leonas Valkūnas • Gintaras Valušis • Česlovas Venclovas • Pranas Viškelis • Edmundas Kazimieras Zavadskas • Mečislovas Žalakevičius • Remigijus

Žaliūnas • Antanas Žilinskas • Henrikas Žilinskas • Artūras Žukauskas • Vladas Žulkus

#### Members Emeriti of the Lithuanian Academy of Sciences

Ramutis Bansevičius • Jurgis Brėdikis • Antanas Buračas • Mykolas Daunys • Vincentas Dienys • Danielius Eidukas • Algirdas Gaižutis • Jonas Grigas • Romualdas Grigas • Algimantas Grigelis • Edvardas Gudavičius • Eugenijus Arvydas Janulaitis • Česlovas Jukna • Benediktas Juodka • Gytis Juška • Vytautas Juodkazis • Leonardas Kairiūkštis • Sofija Kanopkaitė • Romualdas Karazija • Stasys Karazija • Rymantas Jonas Kažys • Zigmuntas Kiaupa • Albinas Kusta • Pranas Kūris • Mykolas Lasinskas • Vytautas Martinkus • Jonas Mockus • Algirdas Juozas Motuzas • Algis Petras Piskarskas • Antanas Praškevičius • Kazimieras Ragulskis • Algirdas Jonas Raila • Vytautas Petras Rančelis • Pranas Sadauskas • Mifodijus Sapagovas • Leonardas Sauka • Vytautas Jonas Sirvydis • Vytautas Konstantinas Sirvydis • Algirdas Skirkevičius • Algirdas Sliesaravičius •

Algirdas Petras Stabinis • Jurgis Kazimieras Staniškis • Vytautas Pranciškus Straižys • Donatas Surgailis • Vytas Antanas Tamošiūnas • Adolfas Laimutis Telksnys • Antanas Tyla • Giedrius Uždavinys • Juozas Vidmantis Vaitkus • Algirdas Vaclovas Valiulis • Veronika Vasiliauskienė • Jurgis Vilemas • Gintautas Žintelis

#### Foreign Members of the Lithuanian Academy of Sciences

Hojjat Adeli • Zhores Alferov • Aleksandr Alimov • Makoto Asashima • Algirdas Avižienis • Petras Avižonis • Aleksei Bogdanov • David Bridges • Andrew Bush • Pietro Umberto Dini • Winfried Drochner • Robert Neil Jones • Sven Ekdahl • Hans Jürgen Voigt • Hans Forsberg • Charlotte Froese Fischer • Michael Fullen • Rivner Ganiev • Friedrich Götze • Yuri Gleba • Jan Harff • Sergei Inge-Vechtomov • Stephen E. Halford • Rienk van Grondelle • Heinz Jeroch • Jan Jurkiewicz • Thomas Jüstel • Romualdas Kašuba • Zdzisław Kawecki • Vytautas [Victor] Klemas • Emilijus Knystautas • Ivan Karl-Eric Magnusson • Peter Malfertheiner • Algis Mickūnas • Guido Michelini • Zenon Mróz • Sten Nilsson • Panos M. Pardalos • Philippos C. Patsalis • Dmitri Pavlov • Hans Hartmut Peter • André Preumont • Calyampudi Radhakrishna Rao • Baiba Rivža • Miguel A. F. Sanjuan • Eva Maria Severinson • Karl Skirnisson • Kenway Montgomery Smith • Viktoras Algirdas Sniečkus • Jan Erik Solheim • Ojārs Spārītis • Jānis Stradiņš • Voldemārs Strīķis • Roland Sune Svanberg • William Riegel Schmalstieg • Michael Shur • Rimas Vaičaitis • Rimvydas Vasaitis • Dieter Werner • Richard Villems • Romualdas Viskanta • Antonino Zichichi

### Division of Humanities and Social Sciences



The humanistic thought is an inseparable link between research and culture of Lithuania and therefore it is not incidental that humanities were the dominant disciplines in the newly-established Lithuanian Academy of Sciences. Initially, the Division of Humanities comprised the Institute of the Lithuanian Language, the Institute of Lithuanian Literature, the Institute of Ethnology, and the Institute of History. The Division of Social and Economic Sciences comprised the Institute of Economics and the Institute of History of Lithuanian Law and Economy. The work of the academy members was not interrupted even during the years of the German occupation: they were in the process of compiling the volumes of the dictionary of the Lithuanian language, managing collections of folklore, archival documents, materials of earlier archaeological research, and statistical data on the country's social and political development. During the post-war years, humanities and social sciences were coercively ideologised, but the ideas of the nation's statehood and sovereignty, intellectual maturity, and moral and economic well-being of the Lithuanian population were not forgotten. Even during the Soviet period the Academy resisted Sovietisation and Russification of research and upheld Lithuanian as the main language of communication. During the Soviet period, the academy remained Lithuanian both in the ethnic composition of its staff and in the language it used. It offered shelter to the country's well-known figures who were victims of political persecution. With the support of the creative intelligentsia, the Lithuanian Academy of Sciences was the hotbed of the Sąjūdis initiatives, the Greens (Žalieji) and other democratic movements; it was here that the draft Constitution of the Republic of Lithuania was prepared.

Members of this division are active in fostering research into Lithuanian language and literature, folklore studies, the history of Lithuania, cultural and ethno-cultural heritage, philosophy, the country's finance, economy, social changes, and international and civil law. Founded by the members of the academy, schools in various disciplines have achieved international recognition. The school of linguistics developed by Zigmas Zinkevičius, Vytautas Mažiulis, Aleksas Girdenis, Algirdas Sabaliauskas and other scholars laid the foundations for Vilnius becoming a global centre of Baltic studies. There evolved other original research schools of national significance: works by Vytautas Merkys revealed the depth of the achievements in the discipline of the history of Lithuania, while those by Eduardas Vilkas made an immense contribution to the studies of economics. The poetic culture of Lithuania and the country's national revival can hardly be perceived without the creative work of the academician poet Justinas Marcinkevičius.

The latest works by the academy members strongly influence the humanities and cultural maturity of the present time. Marijus Arvydas Šliogeris's works, his way of thinking, and the dimension of his thought are significant to the philosophy of recent decades. The books on literary phenomenology by Viktorija Daujotytė-Pakerienė contain original insights into the association of literature with other layers of spiritual life. Giedrius Kuprevičius's music and its actualisation reflect modern shifts in musical culture. Research by the historians and archaeologists Edvardas Gudavičius, Eugenijus Jovaiša, Antanas Tyla, and Vladas Žulkus, by the literary scholars Jūratė Sprindytė and Leonardas Sauka, by the sociologists and economists Antanas Buračas and Zenonas Norkus is adding impetus to the achievements of the respective fields of scholarship in Lithuania. The names of other members of the academy and research positions associated with them are gaining rapid prominence in the panorama of research at home and abroad.

Currently headed by Domas Kaunas, the Division of Humanities and Social Sciences annually organises a significant number of academic conferences that address relevant issues in research, art and culture, and preservation of heritage values. Its members contribute considerably to educatory and civic initiatives, conduct relevant and significant studies in cultivating the civic spirit of the country's population and educating the younger generation of researchers. To improve the activities within the division and create favourable conditions for the work of its members, the division has three sections: humanities, social sciences, and the arts.



Viktorija Daujotytė-Pakerienė and Giedrius Antanas Kuprevičius



Zenonas Norkus

### Division of Mathematical, Physical, and Chemical Sciences



The Division of Mathematical, Natural, and Applied Sciences was founded in 1945. It has undergone a number of reorganisations. In 1990, the existing Division of Physical, Technical, and Mathematical Sciences was reorganised into two divisions. Addition of chemical sciences completed the reorganisation of the division, and Algirdas Šileika was elected its chairperson. In later years it was headed by Henrikas Pragarauskas, Valdemaras Razumas, and Feliksas Ivanauskas. At present the division is headed by Leonas Valkūnas.

The Division of Mathematical, Physical, and Chemical Sciences is the largest in the Academy. Currently it comprises 27 full members, nine members emeriti, and a large group of foreign members, including Prof. Zhores Alferov, who was awarded the Nobel Prize in 2000. The work of the division is organised in three sections: mathematics (chaired



Left to right, Remigijus Leipus, Vygantas Paulauskas, and Valdas Stanislovas Laurinavičius



At a division meeting

by Remigijus Čiegis), physics (Juozas Vidmantis Vaitkus), and chemistry (Ričardas Makuška).

The first mathematician to be elected a full member of the Lithuanian Academy of Sciences in 1962 was Jonas Kubilius, who was later followed by Vytautas Statulevičius and Bronius Grigelionis. These three outstanding scientists raised a large group of disciples and formed the Lithuanian school of the probability theory. The school carries out research in a number of directions: limit theorems, theory of stochastic processes, the probability theory in infinite-dimensional spaces, probabilistic and analytical number theories. Other branches of mathematics were also developed at the division. Significant results have been achieved in the fields of differential equations and numerical mathematics.

Professors Adolfas Jucys and Povilas Brazdžiūnas, the first academicians in the section of physics, began to shape the main research trends in this field in Lithuania. Professors Paulius Slavėnas, Juras Požela, Jurgis Viščiakas, Zenonas Rokus Rudzikas, and Algis Petras Piskarskas continued research into physical problems that included almost all branches of physics. Results achieved in atomic and molecular physics, semiconductor physics, photometry of the stars, nonlinear optics and spectroscopy, and laser physics have brought global recognition to the Lithuanian school of physics.



Left to right, Algis Petras Piskarskas, Leonas Valkūnas, and Artūras Žukauskas



Juozas Vidmantis Vaitkus (left) and Feliksas Ivanauskas

The first fundamental trends of research in the section of chemical sciences were formulated by professors Juozas Matulis and Jonas Janickis. Later the thematic field expanded to include all main branches of chemistry. Significant results have been achieved in electrochemical and chemical precipitation of metals, organic synthesis, inorganic and analytical chemistry, polymer synthesis and analysis, and biochemistry.

Members of the division carry out expert work and take part in commissions and expert groups of the Lithuanian Research Council and the Ministry of Education and Research of Lithuania; they are members and experts of the councils, committees, and commissions of the European Union and other international organisations, as well as reviewers of projects and reports of state research programmes and of works and projects submitted for competitions. They also participate in the work of the commission of the Lithuanian Science Prizes.

# Division of Biological, Medical, and Geosciences



The Division of Natural Sciences (nature research, mathematics, and technical sciences) was founded in 1941 and at the time it also included biological, medical, chemical, agricultural, and other natural sciences. Juozas Matulis was the first general secretary of this division. In later years, it was headed

by Vladas Lašas, Antanas Minkevičius, Vytautas Girdzijauskas, Leonardas Kairiūkštis, Vytautas Kontrimavičius, Vytas Antanas Tamošiūnas, and Vytautas Basys. Since 2018, the division has been chaired by Vaidutis Kučinskas.

Members of the division founded the Nature Research Centre, the Zoological Museum, Žuvintai Reserve, and Vente Cape Bird Ringing Station; they established research schools in parasitology, allergology, geology, biochemistry, bioelectrochemistry, genetics and genomics, cardiac surgery, cardiac electrostimulation, plant physiology, ornithology and bird migration research, marine and shore research. modern biotechnology, immunology and human genetics. The most outstanding recent monographs were written by Gediminas Valkiūnas, Juozas Kulys, Vaidutis Kučinskas, and Mečislovas Žalakevičius. The work conducted by members of the division or research groups headed by them have been honoured with Lithuanian Science Prizes, prizes of the Baltic Assembly, National Progress prizes , and orders of the Republic of Lithuania. Zita Aušrelė Kučinskienė was awarded the Albert Schweitzer gold medal of the Polish Academy of Medicine; Virginijus Šikšnys was awarded Warren Alpert Foundation Prize (Harvard University, USA) for exceptional research in bacterial immune systems, the Novozymes Prize (Denmark), and the Kavli Prize (Norway) in nanoscience. Saulius Klimašauskas is the first Lithuanian scientist to have been awarded the prestigious European Research Council grant.

Currently, the division consists of four sections. The section of general biology unites the bestknown representatives in the branches of general and human genetics, ecology, zoology, botany, ornithology, immunology, and parasitology. They conduct fundamental research into malaria parasites (Gediminas Valkiūnas) and information interaction of the organisms via chemical compounds (Vincas Būda). Significant results have been achieved in



Jonas Remigijus Naujalis (left) and Algirdas Skirkevičius



Virginijus Šikšnys



Left to right, Daiva Rastenytė, Limas Kupčinskas, Kęstutis Sasnauskas, and Saulius Klimašauskas

the work on the human genome, in determining the origin of the genome of the Europeans and of the Lithuanians, in identifying the genetic causes and mechanisms of intellectual disability (Vaidutis Kučinskas); a new branch of science, climate change ornithology, has been developed and proposed on the basis of research (Mečislovas Žalakevičius).

Virginijus Šikšnys, of the biology section, has determined signaling pathways of cyclic oligonucleotides while examining the mechanisms of microorganism immune systems (CRISPR) and showed their significance in the activation of non-specific degradation of RNA. In the process of investigation of the mechanisms of epigenetic inheritance, Saulius Klimašauskas developed new methods of epigenetic profiling; Česlovas Venclovas has



Left to right, Kęstutis Kilkus, Gediminas Motuza Matuzevičius, and Algimantas Grigelis

designed new methods of protein structure analysis and quality assessment; Kęstutis Sasnauskas carried out analysis of yeast gene expression systems for the production of heterologous proteins and for design of new diagnostic measures.

Members of the section of medical sciences are pursuing research in cardiology (Remigijus Žaliūnas, Aleksandras Laucevičius), investigate the pathogenesis and risk factors of arteriosclerosis and their relation with the patient's genome (Zita Aušrelė Kučinskienė), carry out clinical, epidemiological, molecular, genomic, and microbiota research into ulcerous colitis and Crohn's disease (Limas Kupčinskas), have identified the interaction of environmental and genetic factors. Rūta Dubakienė has identified the interaction between environmental and genetic factors in the formation of allergic diseases, while Rimantas Jankauskas has determined, through palaeogenomic and palaeopathological tests, the genome peculiarities of the European population of different historical epochs.

Significant results have been achieved by the members of the section of geosciences. Robert Mokrik conducted <sup>81</sup>Kr/Kr radioisotopic testing of groundwater in deeper parts of the Baltic region using an extremely sensitive magneticoptical trap, Jonas Mažeika directed nuclear geophysical research towards the chronology of processes in past environments and past climate changes; of immense importance is the design of the legal system for deep earth examination, use, and protection by Gediminas Motuza Matuzevičius. Algimantas Grigelis is an active researcher into the history of the discipline of geology in Lithuania. He has published books on the academicians Vytautas Gudelis, Juozas Dalinkevičius, and professors Mykolas Kaveckis and Ignotas Domeika.

The latest achievements in biomedical and geosciences are introduced to the general public at annual conferences 'Modern Achievements in Biology in Lithuania' and 'Biofuture: Perspectives in Nature and Life Sciences', and at a conference intended for the teachers of Lithuanian schools.

### Division of Agricultural and Forestry Sciences



The Division of Agricultural and Forestry Sciences was established in 1995, after the reorganisation of the Division of Biological, Medical, and Agricultural Sciences. The new division was chaired by Veronika Vasiliauskiene and Albinas Kusta, two terms each. At present, the division is headed by Zenonas Dabkevičius. The division carries out its activities in five sections: agronomy (chair Vidmantas Stanys), forestry (Darius Danusevičius), zootechnics and veterinary medicine (Henrikas Žilinskas), agriculture and environmental engineering (Algirdas Raila), and agrarian economics and sociology (Vlada Vitunskienė). In addition to the sections, the division members conduct research in the commission for food quality and safety (chaired by Pranas Viškelis) and the water council (Arvydas Povilaitis). The activities of the division are concentrated on the solution of the most relevant scientific issues in agriculture and forestry, husbandry and veterinary, environmental engineering, plant and animal biology and parallel fields and directions, on the promotion of research results, development of and innovations in experimental agriculture. Considerable attention is being paid to inter-institutional, interdisciplinary, and international relations, and to promoting the prestige of agrarian sciences. The division organises international and local scientific conferences, discussions, and seminars, and is actively encouraging the activities of young scientists.

Members of this division have conducted many significant research studies. Leonardas Kairiūkštis developed the theory of the formation of forest stands, while Stasys Karazija is the author of a forest typology theory. Algirdas Sliesaravičius pioneered research into plant biotechnology in Lithuania. Veronika Vasiliauskienė is one of the authors of the school of grassland husbandry, Albinas Kusta is one of the initiators of the 'Nemunas' valley of research, studies, and business, and Zenonas Dabkevičius is a promoter of the school of plant pathology. Members of this division are engaged in genetics, selection, and development of new plant varieties: Vidmantas Stanys focuses



Zenonas Dabkevičius (left) and Vidmantas Bižokas



Left to right, Pranas Viškelis, Marius Aleinikovas, Tadeušas Šikšnianas, and Vytautas Konstantinas Sirvydis

on horticulture, Vytautas Ruzgas on winter wheat, Darius Danusevičius conducts research into the genetics of forest plants, and Alfas Pliūra investigates the genetic variety of forest plants. Significant results have been achieved by members of the zoo-technology and veterinary medicine section. Česlovas Jukna and Vytautas Konstantinas Sirvydis have developed modern nutritional technologies of poultry and animals, respectively; Henrikas Žilinskas has been working on the improvement of animal reproductive qualities, Vidmantas Bižokas's research is focused on veterinary surgery and lymphology. Antanas Sederevičius conducts and organises research into the diagnostics of the digestive tract of livestock. Pavelas Duchovskis is a promoter of the school of plant ontogenesis, phytophysiology, and ecophysiology, and Algirdas Juozas Motuzas examines the soils of Lithuania and has compiled their classification. Arvydas Povilaitis's scientific research deals with water resources and their exploitation, and Algirdas Jonas Raila focuses on thermoenergetic processes in biotechnologies. Pranas Viškelis has developed products and innovative technologies for processing biologically valuable food of plant origin.

Members of this division take part in various local and international research programmes and projects, provide qualified expertise, and publish 50–60 research papers every year.



Members of the Division of Agricultural and Forestry Sciences at a general meeting of the Lithuanian Academy of Sciences



Left to right, Pavelas Duchovskis, Henrikas Žilinskas, Vidmantas Bižokas, and Antanas Sederevičius

### **Division of Technical Sciences**



The Division of Technical Sciences was established in 1990. From 1990 to 1997 it was headed by Algirdas Žukauskas, from 1997 to 2005 by Ramutis Petras Bansevičius, and from 2005 to 2013 by Vytautas Ostaševičius. The current head of the division is Gintautas Žintelis. The fields of research within the division were established by the most experienced and prominent members of the Lithuanian Academy of Sciences: Algirdas Žukauskas (energy), Aleksandras Čyras (mechanics of building construction), Antanas Kudzys (mechanics of building construction), Jonas Mockus (cybernetics), Kazimieras Ragulskis



Gintautas Žintelis (left) and Bronius Jaskelevičius



Adolfas Laimutis Telksnys

(mechanics), Adofas Laimutis Telksnys (electronics and information science), and Jurgis Vilemas (energy).

The division has five active sections responsible for corresponding fields of research: electronics and information science (chair Adolfas Laimutis Telksnys), energy (Jurgis Vilemas), mechanics (Kazimieras Ragulskis), materials engineering (Sigitas Tamulevičius), and civil engineering (Gintaris Kaklauskas).

The members of the division carry out research in the field of technological sciences and analyse research themes and results. They provide qualified expertise in evaluating scientific research, projects, studies, innovations, competition entries, and applications on behalf of the Government, ministries, and other institutions, or commissioned by them. They also provide consultation, submit proposals, and participate in the design of hi-tech development programmes and projects, in the expansion of the collaboration of research, studies, and business, and in stimulating research activities of young scientists.

Members of the electronics and information science section achieved excellent results in the theory and practice of recognition of the words and phrases of the Lithuanian spoken language (Adolfas Laimutis Telksnys), issues in global and discrete optimisation and data analysis (Jonas Mockus, Gintautas Dzemyda, Antanas Žilinskas), system and process modelling, identification, and management (Vytautas Kaminskas), design automation (Gintautas Žintelis), and design of environment protection technologies (Jurgis Kazimieras Staniškis).

The resolve and activities of Jurgis Vilemas, Eugenijus Ušpuras, Algirdas Kaliatka, Juozas Augutis and their colleagues were instrumental in bringing the safety of the Ignalina Nuclear Power Plant to the level of safety of nuclear plants in the West. At present the main focus is placed on the development of increasing use of the renewable power sources in the world and in Lithuania (Jurgis Vilemas), the conceptual design of the DEMO nuclear fusion power station (Eugenijus Ušpuras), and on active search for energy safety solutions (Juozas Augutis).

As members of the school of precision vibromechanics, vibrotechnology, and robotization founded by Kazimieras Ragulskis, members of the section of mechanical sciences have established their own directions of research: mechatronics, a synthesis of mechanics and electronics (Ramutis Petras Bansevičius, Genadijus Kulvietis), technologies of microelectromechanical systems (Vytautas Ostaševičius), new functional and technological mechanisms for the defence, machine, and equipment industries (Algimantas Fedaravičius), and digital analysis of dynamic systems (Minvydas Kazys Ragulskis).

Members of the section of materials engineering intensively develop methods of ultrasound diagnostics and their application (Rymantas Jonas Kažys, Liudas Mažeika), carry out polymer synthesis and research (Juozas Vidas Gražulevičius), seek outstanding scientific results in the field of vacuum and plasma technologies (Sigitas Tamulevičius), conduct research into the processes of welding of ferrous and non-ferrous metals, formation of surface coating, thermal structural aging of materials (Algirdas Vaclovas Valiulis), design and develop methods of instrumental analysis and apply them in molecular analysis of biological objects (Audrius Sigitas Maruška).

Research conducted by the members of the civil engineering section addresses engineering structures, their elements and materials (Rimantas Kačianauskas), technologies and organisation of building construction, decision-making theories and automated design, expertise and decision-making support systems (Edmundas Kazimieras Zavadskas, Artūras Kaklauskas), mechanics of reinforced concrete structures (Gintaris Kaklauskas), cement chemistry and technology, synthesis and qualities of calcium hydrosilicates (Raimundas Šiaučiūnas).

Members of the division have attained international recognition: they are foreign members of the academies of sciences of other countries, honorary doctors at foreign universities, members at international research organisations, scientific journals, committees, and federations, and carry out qualified expertise for international programmes and projects.

### **Research and Society**



Mixed choir 'Dobilas' is performing at the concert dedicated to the centenary of the re-establishment of Lithuania's statehood

The Palace of Scientists is a division of the Lithuanian Academy of Sciences responsible for the organisation of research, art, and culture events that provide the general public with opportunities to learn about scientific achievements and trends in separate fields of science from the scientists themselves. The continuous cycle of events 'Days of Scientific Knowledge' is organised with the aim of the educating the younger generation and promoting the profession of the scientist. The schoolchildren and gymnasium pupils of Vilnius have the opportunity to meet outstanding scientists and to attend their lectures on various issues and achievements in information science, medicine, biology, chemistry, physics, and psychology. Members of the academy not only give lectures, but also speak to the pupils about careers in research: how to choose them, where to study, how to prepare for examinations. They participate in the events of the 'Career Week'. The pupils are shown around to the Laser Research Centre of Vilnius University, the National Visitors' Centre of the State Service for Protected Areas, and to the Energy and Technology Museum.

The Palace of Scientists actively promotes intellectual education of the Lithuanian general public of different ages and interests raising their interest in science and culture, evoking positive emotions, and offering presentations of scientific and cultural achievements. Debates on relevant subjects, discussions about new books, events dedicated to the anniversaries and commemoration of scientists and prominent figures are organised with this objective in mind. Mention should be made of such continuous cycles of events as 'Portraits of Famous People', 'Professors and Their Schools', 'Science for Society', 'Remembering Prominent Scientists' and others.



Algirdas Vaclovas Valiulis is giving a talk to schoolchildren at the Energy and Technology Museum

The palace organises various events to introduce the activities of research institutions, to inform the general public about the latest achievements in exact and biomedical sciences and humanities, and to commemorate the dates important to Lithuania.

The Palace of Scientists is a link connecting science and culture with the general public. It is looking for new avenues in the actualisation of the role of science and the scientist in contemporary life.

## The Lithuanian Academy of Sciences and the World

The Lithuanian Academy of Sciences promotes and organises collaboration between Lithuanian and foreign research centres and individual scientists by supporting relations of Lithuanian researchers with foreign academies of sciences and other institutions, with the assistance of its foreign members and by organising international events relevant to scientific research and experimental development.

The Lithuanian Academy of Sciences represents Lithuanian science in numerous international associations: All European Academies (ALLEA), the International Council for Science (ICSU), European Academies' Science Advisory Council (EASAC), the Interacademy Partnership (IAP), and others. The Academy takes part in the work of these organisations by addressing global problems, spreads information in Lithuania about conducted analyses and proposed science-based solutions.

Outstanding foreign scientists whose research activities are associated with the Republic of Lithuania are elected foreign members of the Lithuanian Academy of Sciences. At present, the Academy has 62 foreign members. Through its cooperation with the academies abroad based on bilateral agreements, the Academy actively supports and funds international mobility of researchers. The Lithuanian Academy of Sciences has agreements with research organisations in 26 foreign countries: academies of Austria, Belarus, Estonia, Latvia, Poland, Russia, Finland, Switzerland, the British Academy, the Council of Lindau Nobel Laureate Meetings and the Foundation of Lindau Nobel Laureate Meetings at Lake Constance, the Royal Society, the Norwegian Academy of Science and Letters, the Russian Academy of Agricultural Sciences, the Slovenian Academy of Sciences and Arts, and others.

International scientific cooperation agreements are one of measures promoting the mobility of researchers. The exchange programmes provided by these agreements are accessible to researchers from all science and research organisations in Lithuania. It offers the Lithuanian scientists an excellent opportunity to work at international research centres, to gain knowledge and experience abroad, to receive foreign partners, and to carry out joint research projects.

### Scientific Periodicals

The Publishing Department of the Lithuanian Academy of Sciences prepares for publication and publishes ten peer-reviewed scientific journals: Acta medica Lituanica (chair of the editorial board Vytautas Basys), Biologija (Algimantas Paulauskas), Chemija (Albertas Malinauskas), Energetika (Eugenijus Ušpuras), Filosofija. Sociologija (Arvydas Virgilijus Matulionis), Geologija. Geografija (Donatas Kaminskas), Lithuanian Journal of Physics (Evaldas Tornau), Lituanistica (Eugenijus Jovaiša), Menotyra (Gabija Surdokaitė-Vitienė), and Žemės ūkio mokslai (Kęstutis Romaneckas). All the journals are published quarterly in print and online.

The journals are indexed in international scientific databases. Three scientific periodicals of the Lithuanian Academy of Sciences (*Chemija*, *Lithuanian Journal of Physics* and *Filosofija*. *Sociologija*) are indexed and refereed in Clarivate Analytics WoS, Acta medica Lituanica in PubMed, *Chemija, Energetika*, and *Filosofija*. *Sociologija* in SCOPUS. Most of the journals are indexed in EBSCO, Index Copernicus, and other databases. All the journals are published using Open Journal Systems (OJS) open source journal-hosting platform. The scientific periodicals of the Lithuanian Academy of Sciences and their digitalised articles are assigned digital object identifiers (DOI) of intellectual property registered by Crossref, an official DOI registration agency. They are open access journals and can be found at the website of the Lithuanian Academy of Sciences Publishers: www.lmaleidykla.lt.

The journals are available through a subscription service and are also supplied to local and foreign libraries on the basis of journal exchange programmes. From 16 to 80 copies of each periodical are assigned to the exchange programmes and sent to 32 countries of the world. The majority of the journals are sent to various libraries of research institutions in Poland, Germany, the USA, Russia, the Czech Republic, and other countries.





In a reading hall of the Wróblewski Library of the Lithuanian Academy of Sciences

Established in 1912, today the Wróblewski Library of the Lithuanian Academy of Sciences is a scientific library of state significance and a cultural, scientific, and educational institution. The functions of the founder of the library are fulfilled by the Lithuanian Academy of Sciences. The stocks of the Library are open to all citizens of Lithuania

and of foreign countries. The Wróblewski Library is one of the largest and most important institutions of information resources, cultural memory, and Lithuanian cultural and written heritage both in Lithuania and in neighbouring countries. According to the latest data of 2018, the stocks of the library consist of almost 3,800,000 documents. It has 8,300 registered users.

With the name of Wróblewski restored in 2009, today the library of the Lithuanian Academy of Sciences is undergoing significant changes. A new publishing department was established in 2010 and resumed earlier suspended publishing activities of the library. Thirty-one publications and two CDs were produced from 2010 to 2017. Another new section of the library, the Museum of the Lithuanian Book and Scholarly Thought, was established in 2017. The conception of its activity was prepared and approved in 2018.

The Library's main objective lies in meeting the information needs of the research community, preserving the existing collections of the documentary heritage and passing them on to the future generations, and carrying out its mission of research and education. Thanks to the collections of written heritage, the development of which was steered by historical circumstances, the library is an institution of research into the documentary heritage of the history of science and culture. Its task is to provide the research community with information resources, to carry out and promote studies into the documentary heritage of the history of science and culture, to implement new information and communication technologies, and to nurture an awareness of the value of written works. The library carries out unique projects based on the application

of modern technologies and research into digital heritage. One of them is a partnership in developing the international scholarly database *Lituanistika*. Thematically, the database is concerned with the evolution and the present of the state of Lithuania, its society and culture, the Lithuanian nation and the Lithuanian language. In addition to the usual bibliographic information and summaries in Lithuanian and English, it stores the archives of digital texts of all articles and books.

The Wróblewski Library was among the first to launch projects (including international) of digitalisation. It is one of the largest partners in the project of the development of the Virtual Digital Heritage System.

The data for 2018 show that currently the library cooperates with 335 exchange partners (327 foreign and eight Lithuanian). In the Tadas Vrublevskis Reading Room, visiting scientists from Poland, Great Britain, Germany, the USA, France, Japan, Russia, Belarus, and other countries find material relevant to their research.

### Working for Lithuania's Future



Festival 'Spaceship Earth 2018'

In order to take advantage of the financial assistance from the European Union in fulfilling the strategic objectives of the Lithuanian Academy of Sciences, the EU Structural Funds Projects Management Group was established within the Organisational Department of the Academy in 2010. It is responsible for the design, preparation, and implementation of the projects. At present the unit of five employees is headed by Greta Tumkevičienė.

Close contacts have been established with other organisations in the process of planning and implementation of the projects. The first one was carried out from 2010 to 2012 with the Lithuanian Catholic



Festival 'Spaceship Earth 2018'. A lecture to schoolchildren at the Centre for Marine Research of Klaipėda University. Photo by the organisers

Academy of Science. It involved the consolidation of relations with foreign research centres and academies, the enhancement of the researchers' skills to present their results to the general public, and the provision of a better access to scientific information. The project 'Promotion of Gender Equality in Sciences (LYMOS)' was implemented from 2011 to 2013 in cooperation with the Lithuanian Research Council, the international association BASNET Forum, and the National Union of Student Representations of Lithuania. The aim of the project was to increase the number of women scientists at the top level of academic and research management in the fields of physical and technological sciences.

Two ongoing projects address popularisation of science and diffusion of research results by publishing scientific periodicals. The science popularisation project includes the series of books 'Science for All', lectures by the winners of the Lithuanian Science Prize, festivals 'Spaceship Earth' and 'Eureka', conferences on issues relevant to the general public, various activities for children and for students at universities and other spaces. The budget of the first stage (2011–2015) of the science popularisation project was 1.5 million Euros, and of the second stage (2016–2019) 1.3 million Euros.

The objective of the second largest project of the Lithuanian Academy of Sciences is publication of Lithuanian scientific periodicals in different branches of science, which were selected by experts. The budget of the first stage (2011–2014) of the project of publication and coordination of scientific periodicals was 1.2 million Euros, and of the second stage (2016–2019) 1.3 million Euros.

In 2018, the Lithuanian Research Council and the Lithuanian Academy of Sciences launched a threeyear project aimed at enhancing the competences of scientists and researchers in preparing research project applications.

### **Promoting Lithuanian Science**



The award ceremony of the Young Researcher Grant competition held by the Lithuanian Academy of Sciences. 24 September 2018

#### **Lithuanian Science Prizes**

Authorised by the Government of the Republic of Lithuania, the Academy has been organising the competition for the Lithuanian Science Prizes since 1993. In 2009, the Government amended the regulations of the Lithuanian Science Prizes to the effect that up to seven prizes are awarded each year. One-third of the members of the Lithuanian Science Prize Commission are the scientists who were awarded the prize during the last five years. The commission is formed of 29 members who work in two sections. The Lithuanian Science Prize is awarded for relevant contributions to science made during the last 15 years. Research conducted or published abroad and important to the history, culture, and economy of Lithuania can also be submitted for the prize.

#### The Lithuanian Progress Prize

In 2017, the Academy of Sciences established the Lithuanian Progress Prize. It is awarded for exceptional results in science or in experimental development (natural sciences and other scientific fields, culture, achievements in the enhancement of statehood, innovations, breakthroughs, etc.) that are well known to the general public. The first laureate of the Lithuanian Progress Prize is Liudas Mažylis, a professor at Vytautas Magnus University, who found the original of the Act of Independence of Lithuania of 16 February 1918 in the Political Archive of the Ministry of Foreign Affairs of Germany in Berlin.

#### **Prizes and Awards of the Academy**

To honour the memory and the work of outstanding Lithuanian scientists, scholars, and public figures, the Academy has established 16 commemorative prizes that are awarded every four years. The prizes are named after prominent scientists, the majority of whom were members of the Academy: Kazimieras Baršauskas (electronics, electromechanics), Povilas Brazdžiūnas (experimental physics), Kazimieras Būga (linguistics), Juozas Dalinkevičius (geosciences), Simonas Daukantas (history), Tadas Ivanauskas (nature protection), Adolfas Jucys (theoretical physics), Justinas Marcinkevičius (literature), Vincas Krėvė-Mickevičius (literature), Jonas Kriščiūnas (agricultural sciences), Jonas Kubilius (mathematics), Vladas Lašas (medicine), Povilas Matulionis (forestry), Juozas Matulis (chemistry), Albinas Rimka (economics), Kazimieras Simonavičius (mechanics), Pranciškus Šivickis (biology), Algirdas Žukauskas (heat engineering).

The Academy awards ten annual prizes to young scientists and doctoral students, and 15 prizes and certificates of appreciation to students in higher education for the best research work of the year.

In 2001, on the occasion of the Academy's 60th anniversary, the Medal of the Lithuanian Academy of Sciences was instituted, and in 2007, the Letter of Acknowledgement of the Presidium of the Academy was introduced.

#### The Young Researcher Scholarships of the Lithuanian Academy of Sciences

Every year, the Academy organises a competition for the Young Researcher Scholarships. The scholarships are awarded to scientists who have defended their doctoral theses during last five years in support of their relevant scientific research. These scholarships are aimed at encouraging scientific creative activities of young researchers and competition among them, and at supporting research work conducted by talented young scientists. The scholarship is paid for the duration of one year.

#### **Partnerships in Research Awards**

Scientists of the Baltic and other foreign countries who have achieved significant scientific results and made a notable contribution to research cooperation across the Baltic region are awarded the Medal of the Baltic academies of sciences established jointly by the Lithuanian, Latvian and Estonian academies.

The Lithuanian Academy of Sciences and the Grotthuss Foundation established the Theodor von Grotthuss Prize, a medal, and a scholarship awarded to a young researcher in the field of chemistry.

The Division of Humanities and Social Sciences established the Kazimieras Meškauskas Prize awarded to young scientists in the field of economics. The Division of Agricultural and Forestry Sciences and its partners established the Vytautas Vazalinskas Prize for fundamental and applied research in soil, agriculture, and agricultural chemistry.

The Academy organises competitions for the fellowship of the World Federation of Scientists, INFOBALT personal scholarships, scholarships of the Presidents of the Republic of Lithuania to students in higher education established by the Ministry of Education and Research, and for the Meilė Lukšienė Prize. It administers the L'Oreal Baltic 'For Women in Science' Fellowship for young women researchers in Lithuania.

The members of the Academy assess the applications submitted to the competition for the prize to researchers of Lithuanian descent and to researchers who are citizens of Lithuania and work abroad, which was established by the Ministry of Education and Research.



Adolfas Jucys Medal for outstanding achievements in theoretical physics. Sculptor Antanas Žukauskas

#### LITHUANIAN ACADEMY OF SCIENCES

Compiled by Zenonas Dabkevičius, Domas Kaunas, Vaidutis Kučinskas, Leonas Valkūnas, Gintautas Žintelis, Andrius Bernotas, Rolandas Maskoliūnas

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