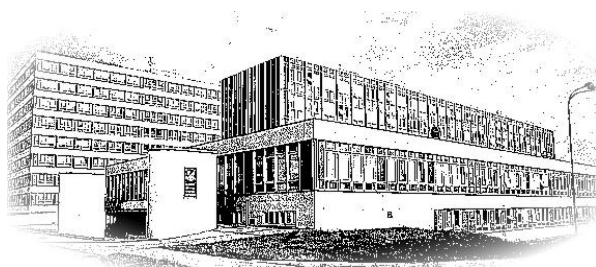


**UNIVERSITY OF DEFENCE**  
**FACULTY OF MILITARY HEALTH SCIENCES**

# **ANNUAL REPORT**

**2016**

**HRADEC KRÁLOVÉ**  
**CZECH REPUBLIC**



**Faculty of Military Health Sciences**

**Hradec Králové**

## EDITORIAL NOTES

*Dear Reader,*

*This publication presents the main activities of the Faculty of Military Health Sciences of the University of Defence in Hradec Králové.*

*The 25th Annual Report includes the principal research and educational activities of the 8 departments, so that it may act as a basis for internal and external evaluation respectively.*

*Should you require more detailed information about our Faculty, it is available on our website <http://fvz.unob.cz> or <http://www.pmfhk.cz>.*

*In case of any suggestions or comments to our activities, do not hesitate to contact us at the address listed below.*

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## **FOREWORD**

The Faculty of Military Health Sciences of the University of Defence in Hradec Kralove is a centre of medical education and research in the Czech Army with long-term history in the Czech Republic. The military medical education began in Hradec Kralove in 1951. The school was established by an order of the President of the Republic as the Military Medical Academy, and later a honorary title of "Jan Evangelista Purkyně" was added. Later on, the name was changed to the Military Medical Research and Postgraduate Institute and in 1988 its original name was used again. In 2004, during professionalization of the army, reorganization of military education and establishment of the University of Defence, a new phase of the Faculty entitled the Faculty of Military Health Sciences began. Since 2004 our Faculty has been one of the three faculties at the University of Defence. Presently, the Faculty of Military Health Sciences plays a key role in military university education with the highest scientific contribution at the university. After merging with two other originally separated military faculties, we have created a viable and developing organism emphasizing strengths of its units. Each faculty covers variety of different tasks with limited staff and resources. Our role is not only to educate and train all medical, pharmaceutical and nursing specialists and to keep scientific excellence, but also to provide a general support to the Military Medical Service which is influenced by staff cuts and restructuring policy as well. Primarily, the Faculty provides study in one accredited Bachelor's study programme (Military Paramedic), three Master's study programmes (Military General Medicine, Military Dentistry, Military Pharmacy) and eight doctoral study programmes.

In spite of every year lower financial budget and personnel reduction, we would like to continue and even to increase most of our activities. Our scientific production rate is the highest at the entire University of Defence. The Czech (Medical Service) field hospitals are well-known around the world and there are not so many similar good examples in our Military except military police and chemical troops. Our approach is different from the majority of other services. Our training is both long-term and intensive thus the students gain deeper knowledge and wider skills as well as awareness of military life. Education, training and research should be joint and a pool of excellent professors, scientists and teachers should be created. But it is a long way to go. The Faculty of Military Health Sciences is an open body for mutual cooperation with scientists and teachers from all democratic countries. In spite of changing priorities in the Czech Military, we have been still dealing with specialization of the Czech Armed Forces in nuclear, biological and chemical protection and we have been engaged in many humanitarian and military deployments of military medical services abroad. Our Faculty will play the key role in this demanding process. We will guarantee the research and fulfilment of training needs for medical corps, specialized forces and for some NATO countries. Nevertheless, our primary

## **FOREWORD**

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concern is to educate and train students and young physicians. This can be hardly possible without our closest partners, international workmates and friends.

At present, the Faculty covers the needs of troops concerning medical professional training in all specializations, medical informatics, science and research. The Faculty represents an optimal model of education for less populous medical specialties in close cooperation with Charles University in Hradec Kralove. The Faculty has educated a lot of specialists not only at a national, but also (at least) at European level. A lot of important positions prove it. These positions have been held by former and present faculty personnel in important international institutions from the NATO Surgeon General in Europe, through a membership in various NATO, EU, United Nations Security Council, and World Health Organization boards, the European Centre for Disease Prevention and Control. The Faculty provides and solves a lot of research projects, it has its own complex laboratory technologies for scientific work, above all within the sphere of life force protection against NBC agents. The scientific results are published in many respected international journals such as the Lancet.

The very fact that the Faculty has survived all reforms, reorganization and other changes demonstrates its uniqueness, high educational, professional and research level. That could not be achieved without close cooperation with other scientific and educational workplaces. Not all universities can be proud of so close collegial relationship as we have with the Medical and Pharmaceutical Faculties of Charles University, the University of Hradec Kralove, the Faculty of Health Studies in Pardubice, the Faculty Hospital in Hradec Kralove and the Military Medical Agency. In 2012, the Central Military Hospital in Prague was declared the Military Faculty Hospital. This medical facility, which we have cooperated very closely with creates a good background for military medical practice of our students. Personally, I value a cooperation with representatives of the city of Hradec Kralove, thanks to which the Faculty has an excellent reputation at city public. I am pleased that this collaboration continues.

In conclusion, I would like to say that all results and successes I perceive as a consequence of the cooperation of teachers and students and other employees of our Faculty, as well as developing relationships with graduates and other partners. My wish for the next period is to continue in the successful development of the Faculty and continually to improve the quality of our work.

Dean of the Faculty of Military Health Sciences

COL Assoc. Prof. Jiří PÁRAL, MD, PhD



# **INTRODUCTION**

## **HISTORY**

The Purkyně Military Medical Academy has been a long-term educational and scientific centre of the Czech Army Medical Service. There has been a very long history of systematic education of military medical personnel in our country. Its beginnings lie, as in many European countries, in the 18th century. Large, permanent armies were being built and the military medical service became a normal part of these armies. In 1776 the War Council of the Vienna Court issued an administrative order which definitely prohibited the employment of field surgeons in the armed forces who had not studied anatomy and who had not had their knowledge officially examined. This can be considered the beginning of organized education of military medical personnel in our country. Six-month courses were organized for field surgeons at the Garrison Hospital in Gumpendorf near Vienna.

The fundamental milestone in the “Austrian” stage was, however, in 1785 with the establishment of the Military Medical (Surgical) Academy named the Josephinum after its founder, the enlightened monarch and father of many political and social reforms, Emperor Joseph II. He saw the mission of the school as fulfilling these tasks:

- education of qualified military surgeons (physicians)
- creation of a learned society for research in medical science
- creation of a permanent field sanitary commission for solving questions concerning combat casualty care.

A number of renowned physicians of Czech origin significantly contributed to nearly 90 years of the school’s history.

The foundation of the independent Czechoslovak Republic in 1918 meant at the same time the creation of a democratic army. The basic element of career military physician training was represented by the Military Medical School. Its establishment was the result of a decision by the Czechoslovak Republic government which by its resolution of 25 June 1926 defined the principles of recruiting professional medical and pharmaceutical personnel to the army. The Military Medical School provided professional training for military physicians and further qualification growth for the performance of higher command functions in the military medical service structure.

The development of the Czechoslovak Military Medical Service in our country was interrupted by the Second World War. When the army was disbanded a number of physicians and medical students participated in foreign and domestic resistance. The largest number of them were concentrated in England. The British government permitted medical students to complete their studies at British universities. They graduated from Oxford

## **HISTORY**

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University. The Czechoslovak Military Hospital was created at London Hammersmith Hospital. A few courses of the Medical and Pharmaceutical Reserve Officer School were taught in Leamington and Walton-on-the-Naze where the Czechoslovak Brigade's out-patients' department was situated. Thus, the tradition of the Czechoslovak military medical educational system maintained its continuity.

In 1945, the pre-war practice of recruiting professional personnel to the Military Medical Service was rebuilt. The Military Medical School in Prague was renowned. At the same time tendencies referring to the practice of some medical services of the world's leading armies which required the establishment of an independent military medical university were increasing. The results of the Second World War and the growth of new knowledge in the field of medicine and especially military medicine played a significant role in this.

In 1951, a new period began in the development of the Czechoslovak military medical educational system. This period has been permanently connected with Hradec Králové for 55 years. Rapid establishment of the Military Medical Academy (MMA) was possible only due to the fact that it was built on the basis of being a theoretical and clinical part of the Faculty of Medicine – a branch of Charles University established in 1945. Thanks to the reputation of its workers, a majority of whom became employees of the MMA, the school became an educational and scientific centre of the Czechoslovak Medical Service and within a short time gained a good reputation both at home and abroad. The MMA has educated a number of outstanding military medical specialists and the first steps of several contemporary top specialists of Czechoslovak medicine were connected with its existence.

Beginning in 1958 and for the next 30 years the military medical system was transformed into the form of the Purkyně Military Medical Research and Postgraduate Institute. Research tasks and activities in the area of further schooling and specialization of military physicians and pharmacists became a fundamental part of its activity. The main portion of a further basic task of the school – the pregraduate training of future military physicians – was taken over by the renewed Faculty of Medicine of Charles University in Hradec Králové. The development of mutual cooperation between these two partner schools, to which the Faculty of Pharmacy of Charles University in Hradec Králové joined in 1976 as a significant guarantee of the education of military pharmacists, has become a part of the military medical system.

In 1988, the school changed its name to the Purkyně Military Medical Academy which, institutionally, reflects more precisely the wide variety of its activities.

In November 1989, the school entered a qualitatively new period of development. It has passed through a transformation which has basically changed some military-professional teaching programmes, the organizational

structure of the school, personnel support, the composition of the educational staff and so on.

The Academy has been included in the new university educational system and since 1993 (origin of the Czech Republic) has served as a training centre for Czech Army medical professionals. It has trained nearly 2600 military surgeons, dentists, and pharmacists till now.

Some special activities have become a main part of the school's activities. The humanitarian role of the Military Medical Service and the Military Medical Academy personnel in the present foci of conflicts in the world without doubt rank among them. As early as 1991 an independent Czechoslovak NBC battalion was sent to the Gulf. In 1994 a further tradition was established – regular operation of military medical personnel in peace-keeping missions in the territory of the former Yugoslavia. The 6th Field Hospital is known to the public for its operations abroad, first in the former Yugoslavia and later in Albania, and then in Turkey following the earthquake in that country. In 2002 members of the Czech Army Military Medical Service were employed in the ISAF mission in Afghanistan. From May to October it was the 6th Field Hospital. Then this mission was taken over by the 11th Field Hospital which completed its operations at the end of 2002. Professional training and personal acquaintance of both field hospitals personnel before their departure abroad has been traditionally carried out at the Purkyně Military Medical Academy.

Some employees of the Purkyně Military Medical Academy are representatives at international non-governmental institutions and in the positions of UN and NATO experts and advisers. The highest position within the NATO Allied Command Europe Medical Service was held by Brigadier-General Assoc. Prof. Leo Klein, MD, CSc He remained in this position until September 2002 when he completed his period of service.

COL Assoc. Prof. Roman Prymula, MD, CSc, PhD has been elected the new Rector of the Purkyně Military Medical Academy. He officially assumed this position on October 1, 2002.

The Academy continued to be a centre for integrated education and scientific research activity ensuring educational and research activities of all kinds and degrees for the training of military medical professionals.

The year 2003 was significant with regard to different opinions on the reform of the Czech Republic Armed Forces. The initially proposed conception was reevaluated in the wake of the reform of public finances which was enforced by the Government. Therefore financial sources were redistributed and reduced. There were new efforts to establish an economic army structure. The Czech Republic Government Resolution no. 1154 of 12 November 2003 entitled "The Conception of the Professional Czech Republic Army Development and Mobilization of the Czech Republic Armed Forces Modified According to Financial Sources" has become the final document respecting NATO general interests.

Academy life was significantly affected by the mission of the Czech Republic Army 7th Field Hospital to Iraq. (The hospital followed with activities of the Czech Chemical Protection Contingent in Kuwait). Transport of soldiers and material began on 18 April 2003. Basra, in southern Iraq, was appointed the final destination. In September 2003 a personnel rotation was carried out and the hospital finished its activities in December 2003. The Academy significantly supported the deployment of the 7th Field Hospital through its personnel, organizational activities, professional education and training.

One of the most important preconditions of transformation of the Czech Republic Army to the fully professional system, is a reorganization of military school system. In the year 2004, substantial changes were introduced in this area. With the aim to join together all military academic institutions, i. e. the Military School of Ground Forces in Vyškov, the Military Academy in Brno and the Purkyně Military Medical Academy in Hradec Králové, the University of Defence in Brno was established. It comprises three faculties – the Faculty of Military Technology, the Faculty of Economics and Management, the Faculty of Military Health Sciences and three independent university institutes. Act No.214/2004 of the Code makes up the legal framework of a new legal subject which at the same time identified the date of establishing the University of Defence on 1 September 2004. Brig Gen Assoc. Prof. Ing. František Vojtkovský, CSc became the Rector of the University of Defence. The University of Defence was officially opened with a solemn inauguration on October 8, 2004.

After the transformation of the Purkyně Military Medical Faculty into the Faculty of Military Health Sciences (seated still in Hradec Králové), the basic functions and tasks of the school focused on a specialized training of the Czech Army medical officers and research work in the area of military health service. However, number of school employees was cut down.

Our school was, once again, renamed to University of Defence, Faculty of Military Health Sciences in Hradec Králové. The former Rector of school COL Assoc. Prof. Roman Prymula, MD, CSc, PhD was elected to be the Dean of our school by the vote of the Academic senate.

In the year 2004, members of our school together with other Czech Republic Army officers carried out their assignments in peacekeeping missions in Iraq, Afghanistan and the Balkans. Specialists of the Department of Field Surgery played there a principal role. In the frame of joint operation of multinational forces in Iraq (MNF – Multinational Forces Iraq) they fulfilled their tasks at special work places in British military hospital. Their assistance was highly appreciated and positively assessed.

During 2005 the process of establishing the new university subject – the University of Defence continued with solving the seat and the position of the Faculty of Military Health Sciences. The Faculty of Military Health Sciences received an important position in the supreme self-governing body of the

university by electing COL Assoc. Prof. Jiří Kassa, MD, CSc as the Head of the Academic Senate of the University of Defence on October 6, 2005. He worked at that points as the Head of the Department of Toxicology and he was a chief specialist of the Czech Republic Army for toxicology.

The year 2006 was an anniversary year. The staff of the Faculty of Military Health Sciences of the University of Defence commemorated the 55th anniversary of the military medical school system in Hradec Králové and its eighty-year existence in the Czech Republic. This school is an irreplaceable centre of training and education of military health care professionals of all branches for the Army of the Czech Republic. The Faculty of Military Health Sciences of the University of Defence guarantees a good quality of the solved research tasks for the benefit of the military health service. High level of the scientific and research activity facilitated the establishment of scientific cooperation with NATO and EU partners.

The extent of school activities is very wide. The clinical departments provide the general public with the health care including special therapeutic activities. Military health care experts are involved in the integrated emergency system. The preparation of personnel for humanitarian and peacekeeping missions is implemented here. The school provides medical information service, experts reports and language teaching for the Army of the Czech Republic.

More information about the history and the present state of the military medical school system and the Faculty of Military Health Sciences of University of Defence is to be found in the publication "Military medical school system", edition: Ministry of Defence, Avis, Prague 2006.

In 2007, intensive activity was typical for all aspects of school life. The Faculty participated in the preparation of Czech field hospital contingents, which provided the health support of ISAF mission in the region of Kabul in Afghanistan. Some medical specialists of the Faculty were directly fulfilling the mission assignments as members of the contingent: MAJ Michal Plodr, MD, PhD worked as head doctor of the hospital, MAJ Ivo Žvák, MD as head doctor of operating theatres, and MAJ Jan Psutka, MD worked at the department of contemporary hospitalization. The main task of the field hospital is to provide professional health care for the wounded and sick during outside combat activities, as well as for their short-time hospitalization.

The public show of scientific and research results is traditionally an important part of school activities. The climax was the 7th Conference of the Association of Military Doctors, Pharmacists and Veterinary Doctors of the Czech Medical Society of Jan Evangelista Purkyně in October, and the 4th Conference Disaster Medicine and Traumatological Planning in November 2007. A competition for the best scientific student's work in doctoral study programmes was introduced for the first time that year. The cooperation with foreign school and scientific partner institutions went on. In this context, the

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November visit from the Military Medical Academy Lyon, led by its new commander General Maurice Vergos, was a remarkable event.

During the year, COL Prof. Roman Prymula, MD, PhD, was re-elected as the Dean of the school and on December 10 was inaugurated into this function.

Public acknowledgement of some of the Faculty eminent research specialists represented significant features of the activity of the Faculty of Military Health Sciences, University of Defence, were in the year 2008. Already in February, Assoc. Prof. Jiří Bajgar, MD, DSc was awarded the Prize of the Rector of the University of Defence for his research work in 2007. The Scientific Council thus appreciated his extraordinarily large publishing and lecturing activities. In addition, Assoc. Prof. Bajgar, was awarded the prestigious Astra Zeneca Award gained from the American Society of Toxicology. The prize winner significantly contributed to the clarification of the toxic effect mechanism of organo-phosphorous compounds and to the development of new prophylactic and therapeutic means against highly toxic nerve paralytic substances.

In May, two letters of appointment of new Czech Universities professors to two eminent workers of the Faculty presented by the President of the Republic to LTC Assoc. Prof. Jan Österreicher, MD, PhD and Assoc. Prof. Jiří Stulík, MD, PhD.

The Faculty workers confirmed repeatedly both their research and organizational capabilities. They became the organizers of many traditional presentations of scientific work. Large community of epidemiologists gathered at the end of May among others to worship the memory of the nestor and military specialist in the field of epidemiology, Professor Bohumil Ticháček, MD, DSc (1924–2006) by their active participation at a conference “Ticháček’s Days of Military Epidemiologists”. Similarly, in September, the Faculty substantially participated in organizing the 4th Hradec Vaccinologists Days.

A number of talents has been revealed by presentation of students’ research work. Periodic Faculty round of research conference of students, who work mostly as scientific and teaching staff at the the Faculty Departments, took place at the end of September. CW2 Veronika Mikusová and CW2 Pavel Novotný obtained this year’s primacy. The postgraduate programme students presented their research results immediately afterwards. Works of authors CPT Karel Šmejkal, MD., a student of postgraduate programme Military Surgery and LT Jiří Dresler, Doctor of Pharmacy, a student of postgraduate programme Molecular Pathology, were awarded the best.

The international cooperation of military medical schools has been among the traditional active forms of the school work. The visit of the delegation of the leadership of partnership school École du Service de Santé

des Armées from Lyon, guided by GEN Francis Huet, School Deputy Commander, confirmed the trend of continuous cooperation.

At last but not least, the conference of the Association of Military Doctors, Pharmacists and Veterinary Doctors of the Czech Medical Society of Jan Evangelista Purkyně has become repeatedly much appraised specialist forums. This year's 8th Conference content concerned mostly Disaster Medicine, Traumatology Planning and Training.

The date of the Conference, the last days of November, seemed to conclude symbolically the year of noticeable presentation and at the same time extraordinary acknowledgements of the Faculty research results.

CPT Zdeněk Šubrt, MD, PhD from the Department of Field Surgery, a graduate of doctoral study programme Military Surgery, was awarded the Prize of the Mayor of the Town Hradec Králové for student research work in 2009.

Prof. Aleš Macela, DSc was awarded the Prize of the Rector of the University of Defence for scientific research in 2008, especially for excellent results in solving scientific projects in the sphere of protection against effects of extra dangerous biological agents.

In September 2009, the present Dean of the Faculty COL Prof. Roman Prymula, MD, PhD was selected to serve as a director of the University Hospital in Hradec Králové. The Academic Senate elected LTC Assoc. Prof. Roman Chlíbek, MD, PhD a new Dean of the Faculty. The Rector of the University of Defence appointed him as Dean on 15th October 2009.

In the year 2010, Prof. Prymula was awarded as the first author of one of the best Elsevier's publications in 2009 for the article: Prymula R., Siegrist C. A., Chlíbek R., Zemlickova H., Vackova M., Smetana J., Lommel P., Kaliskova E., Borys D., Schuerman L.: Effect of prophylactic paracetamol administration at time of vaccination on febrile reactions and antibody responses in children: two open-label, randomised controlled trials. *Lancet*. 2009, 374(9698):1339-50. Extraordinary high quality of this publication was also confirmed by many other awards during the year 2010: 2009 Kredba Award for original scientific work and the best publication from the Czech Medical Association of J. E. Purkyne, 2010 prof. Karel Raska's Award for the best scientific article published during 2009.

In the year 2011, Assoc. Prof. Kamil Kuca was awarded the Prize of the Rector of the University of Defence for scientific research in 2011, especially for excellent results in solving scientific projects in the area of protection against chemical warfare agents.

Prof. Stulik's project entitled Identification of novel *Francisella tularensis* targets for subunit vaccine development was supported by the Defence Threat Reduction Agency, USA for the years 2011–2014. This project is aimed at the development of a subunit vaccine against tularemia. It focuses on (1) the identification of surface associated or secreted virulence factors

from *F. tularensis* using immunoproteomic approaches (2) cloning and expression of these gene products, (3) confirming the role of the selected targets in virulence, and (4) assessing these proteins as protective antigens in animal models.

The Central Military Hospital in Prague became the faculty hospital for the Faculty of Military Health Sciences in 2012.

In January 2013, there was a change at the position of Vice-Dean for research. When Prof. Ing. Kamil Kuča, PhD holding the position of Vice-Dean for research left the FMHS, Prof. Pavel Bošтік, MD, PhD replaced him.

In February 2013, scientists from the University of Defence, the Faculty of Military Health Sciences, from the University of Hradec Kralove and the Centre for Biomedical Research had the best poster presentation at 55th Czech-Slovak Psychopharmacological Conference held in Spa Jeseník. The project of authors Hroudová J., Fišar Z., Raboch J., Korábečný J., Kuča K., was entitled "In vitro effects of acetylcholinesterase inhibitors on monoaminooxidase and NADH-dehydrogenase activity".

In the beginning of May 2013 the Faculty hosted a visit of a Finnish group of CBRN experts and personnel from various branches involved in rapid response management of crises. Both sides presented their main interests during a seminar organized by our Faculty and the Finnish guests were given a tour of selected facilities. This was one of the examples of developing cooperation of European countries within the framework of the European Defence Agency.

In October 2013, the Rector-Commandant of the University of Defence Brigadier General Bohuslav Píkrýl decorated LTC associate professor Zuzana Kročová with the University Medal for her exceptional efforts and long-term results achieved in her research work.

The year 2013 was the election year for the Faculty and the Senate. After 4 years it was time for the academic faculty and students to cast a vote for the Dean. In election, which was held in June, COL Assoc. Prof. Jiří Páral, MD, PhD received the majority of votes and became the new Dean in October 2013. New management of the school was selected by the new Dean.

Year 2014 brought a major change in the structure and functioning of the Faculty. In both the anticipation of a new Service Law and need for optimalization, the academic part of the school was rearranged into 8 departments. Some of the new Heads of the Departments were also selected in order to always have military officers as the Head and the Deputy-Head of each department.

During the year 2015 some major reconstructions of the Faculty buildings were performed or initiated. As funds became available, plans to upgrade the main buildings started to materialize step by step. First the windows were exchanged for modern ones on the building housing our



students and administrative offices. Subsequently, the top floor of the building was reconstructed from inside and work started also on refurbishing the already aging equipment of the main kitchen. We hope that this trend will continue into the following years, which will allow us to gradually improve our working and living environment.

Although our animal housing facility partly suffered from an accidental fire, through the enormous effort of the staff and construction company working together, it was possible to successfully pass the rigorous requirements of re-accreditation. Thus the Animal facility can continue to serve as a vital part for both research and education of our students.

The Faculty was visited by the Minister of Defense and the State Secretary of the MoD, who discussed with the Faculty leadership the future of our school. This was a very important moment, which allowed us to start planning the future development of the Faculty. Subsequent repeated visits by high ranking officials from the MoD focused on more detailed planning and solving individual issues.

All these important developments hopefully started a new era, when after years of merely "maintaining" the status quo of the school, it comes the time of serious reconstruction, upgrade and development.

During the year 2016 reconstruction work continued on the 8th floor of the main building. However, important steps were taken by the Faculty leadership to secure funds for major developments of the school infrastructure. Minister of Defence signed an allocation of funds document, which clearly defines the individual steps of school development and allocates funds for upcoming years. Thus the plan is to a) perform a reconstruction of the departmental building (mainly the outside walls, insulation and windows), b) completely rebuild the 6th floor of the departmental building and create modern laboratories, which will allow for the relocation of the Department of Toxicology from its current building in the city and c) initialize the work on planning and building a completely new facility next to the 2 main buildings, which will eventually house laboratories currently located within the Hospital area, including the Animal facility. In addition, separately from these activities, it has been finally decided at the level of the MoD, that the original student housing located on Heyrovského street will, after years of being closed, undergo a major reconstruction. Both the faculty leadership and students thus become optimistic about the future prospect of students moving into more adequate housing in few years.

At the beginning of December the Faculty Dean COL Associate Professor J. Páral, MD, PhD resigned and the school started to prepare for the election of a new Dean.

## **THE MAIN AIMS OF THE FACULTY IN 2016**

The Faculty of Military Health Sciences (FMHS) of the University of Defence in Hradec Králové represents a centre of medical education, training and research of the Army of the Czech Republic. It covers entirely the needs of the troops concerning medical professional training in all specializations, medical informatics, science and research.

### **1. Education**

The main aims of the FMHS in the field of education were as follows:

- to provide university-level studies in the subjects of military general medicine (6 years), stomatology, pharmacy (5 years), and medical rescue (3 years)
- to provide postgraduate study for PhD degree (4 years) in the following accredited disciplines:

Epidemiology	Military Hygiene
Field Internal Medicine	Military Radiobiology
Field Surgery	Molecular Pathology
Infectious Biology	Toxicology
Medical Microbiology	Preventive Medicine and Public Health Protection

According to the needs of the Surgeon General of the Czech Armed Forces and the Military Medical Service Administration, the Faculty provides specialized and lifelong education of doctors, pharmacists and other military medical service personnel in specified branches of the Act No. 95/2004 of the Code about conditions of receiving professional qualification and specialized qualification to perform a medical profession as a physician, stomatologist, and pharmacist. It unifies the system of their training with requirements of EU.

The Faculty organizes and provides training for medical personnel in the active duty, physicians and nurses. The Faculty provides professional refresher courses for medical staff, non-medical staff and non-medical

personnel serving field medical units and individual units of the military hospital base on select up-to-date topics. The school actively participates in continued training of physicians and health care personnel, who then serve in missions abroad. However, the unique military know-how is also attractive for people, who work out of the military health care sphere. The FMHS provides courses on the advanced first aid in the field not only for Military Medical Service personnel but also for non-medical professionals of Military Police units, reconnaissance and special units within the frame of the Czech Armed Forces, Rapid Reaction Units of the Czech Republic Police and others.

All soldiers selected for foreign missions attend special courses of an advanced first aid. Training in emergency life support in field conditions is required for medical personnel. The courses BATLS (Battlefield Advanced Trauma Life Support) and BARTS (Battlefield Advanced Resuscitation Techniques and Skills) for physicians and nurses or health care personnel include the problems of NBC protection as well and became a standard not only for the entire military medical staff, but also for many other specialists, who are enrolled in foreign missions.

Other courses concentrate on teaching and training of a comprehensive knowledge necessary for providing medical care within the frame of Disaster Medicine. The FMHS also provides other teaching and training activities determined by "The Plan of Courses and Professional Residencies Training of the Czech Armed Forces Medical Service" and "Notification of Director of Personal Section of the Ministry of Defence – Teaching Activities at Military schools and Training Facilities in the Czech Republic and Abroad". It participates in medical personnel training of medical and non-medical specializations under the methodical and professional leadership, in providing instructors for training of advanced categories of medical personnel and in teaching instructors of lower medical specialists training.

## **2. Scientific and research work**

The FMHS of the University of Defence provides and solves research tasks for the Czech Armed Forces Medical Service. Well assembled scientific teams focus on individual research tasks using state-of-the-art technologies. Within the Faculty, complex laboratory technologies for scientific work are utilized for scientific advancements, which lead to the improvement of life force protection against NBC agents. The high scientific level and the achieved results in scientific and research activities of present teams have enabled to for scientific cooperation with foreign partners. The FMHS is a leading institution in the Czech Republic performing military research within the sphere of CBRNE issues in NATO and EU.

The high quality research capabilities and international recognition of the scientific teams form a solid base for scientific cooperation with partners in NATO countries, which is financed by the NATO and EU funds. Within the sphere of the science and research, the FMHS fulfilled strategic purposes of the Czech Armed Forces transformation by targeting the priorities of the Army (biological agents, chemical agents, military health care). Furthermore, it joined the appropriate institutions and organizational structures of NATO and EU countries and obtained original results in these critical areas. From the point of view of specialization and direction of the Czech Armed Forces, the departments of the FMHS solve medical issues of biological, chemical and radiation protection. Previous and current scientific work focuses on medical aspects of the effects of NBC agents and several scientifically oriented departments within the FMHS work in collaboration in solving the specific tasks. This fully corresponds with set priorities in the field of scientific and research work of the Army of the Czech Republic. The military medical service organization and management, information systems, research activities of clinical and therapeutic preventive branches represent other important fields of scientific work.

Many invitations to international symposia and conferences as well as a number of publications prove that scientific knowledge is used in education. The FMHS personnel can publish achieved results of their research work, therapeutic preventive activities and educational activities in the journal *Military Medical Science Letters* - the oldest military specialized journal, which has been published since 1925. As of the last year, the journal is published fully in English. Together with professional scientific results the pedagogical activities are subject of an annual evaluation. Based on the results, the academic staff is successful in keeping a good level of publication activities in journals with impact factor and in other national and foreign journals. This, in turn, enables for relatively broad and successful training activities in the accredited doctoral study programmes.

During the year 2016 the Faculty participated in 2 projects of the Agency for Medical Research, 3 projects of the Grant Agency of the Czech Republic, 1 project of the Ministry of the Interior of the Czech Republic and 1 foreign project (EDA).

Scientific, research and development activities in the field of medical support include the prevention, diagnosis and treatment of sick and wounded. An integral part of this work is to improve the system of the medical equipment administration and supply support.

Research and development is carried out at 8 departments – Epidemiology, Military Medical Service Organization and Management, Radiobiology, Toxicology and Military Pharmacology, Military Surgery,

Military Internal Medicine and Hygiene, Emergency Medicine and Military General Medicine, Molecular Pathology and Biology.

In 2016, scientific work at the Faculty departments focused on CBRNE protection research, projects on pathogenesis of infectious diseases and potential intervention means, prevention in the field of hygiene and epidemiology, topical problems of the field surgery and field internal medicine, topical problems of the organization, management, education and information technology in the Military Medical Service.

The continuous accreditation for proceedings to achieve professorships in the areas of Epidemiology, Medical Microbiology, Toxicology, Field Internal Medicine, Infection Biology and Molecular Pathology and the accreditation for habilitation (associate professorship) in the branches of Hygiene, Preventive Medicine and Epidemiology, Medical Microbiology, Toxicology, Field Surgery, Military Radiobiology, Field Internal Medicine, Infection Biology and Molecular Pathology gives the evidence about the excellent level of achieved results in scientific and research activities of FMHS. In 2016, there were 12 professors (prof.), 15 associate professors (doc.), 3 doctors of science (DSc) and 67 faculty members with research degrees (CSc, PhD) who carried out teaching and research tasks.

### **3. Therapeutic activities**

Special therapeutic activities were provided especially at the departments of Field Internal Medicine, Field Surgery and General and Emergency Medicine. Close cooperation between these subjects and the health service establishments in the region have been continuously developed. Therapeutic medical care was provided especially in the fields of hematologic intensive care, traumatology, hepatobiliary surgery, plastic surgery at the Departments of internal medicine and surgery at the Teaching Hospital.

### **4. International cooperation**

The main aims of international cooperation of the FMHS were to exchange scientific, educational and therapeutic information and to develop working contacts between military medical, medical educational and research institutions of the NATO and EU countries as well as civilian medical institutions with educational, defence research and development programmes worldwide. Residency and exchange programmes for numerous students, doctors and research workers took place at those institutions.

As for study programmes, the Faculty keeps close relations with partner educational institutions above all in NATO and EU countries.

## **5. Expert activities**

The membership in work groups for coordination and cooperation of military medical research and professional training at NATO (COMEDS, BIOMEDAC, RTA/RTO) and at EDA (European Defence Agency), in work groups of government experts for the Convention on the prohibition of biological, bacteriological, and chemical weapons and their destruction in Geneva and UNO, organizing scientific conferences with international participation, and solving foreign research projects under the cooperation of the FMHS personnel are very important for the presentation of international cooperation results. The priority still remains in cooperation in the frame of the Human Factors Medicine of the NATO Research and Technology Organization and its work groups (TG, WG), CBRN and Human Factors cooperation within the frame of EDA and additional collaborative research projects with other foreign scientific institutions. Our aim is to intensify international cooperation in NATO focused on scientific support of the armed forces structure.

## **6. Scientific and educational information services**

Scientific and educational information services that support the Medical Service of the Czech Republic Army were provided by the Department of Information and Communication Technologies. Numerous literature retrievals, courses, library and printing workshops and other information services support for students, teachers, scientists, postgraduates, doctors, nurses and other medical experts were carried out.

## **7. Foreign missions**

The FMHS performed the preparation of health personnel for humanitarian and peacekeeping missions and members of the FMHS staff participated in several foreign missions.

# THE STRUCTURE OF THE FMHS



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**The Department of Epidemiology** as the basic educational and research component of the Faculty of Military Health Sciences (FMHS) is divided into three groups: the epidemiology group; the microbiology, disinfection, disinsection and rodent control group; group of experimental biology.

The Department of Epidemiology has fulfilled the following main tasks:

It has provided undergraduate education at the FMHS and at the civilian Medical Faculty of Charles University in Hradec Králové, as well as postgraduate training and postgraduate doctoral studies. The teaching activities have been particularly aimed at general and special epidemiology with respect to the topical situation in the Czech Army and in the Czech Republic. The topics of "Emerging and Reemerging, Infectious Diseases", "Travel Medicine" and "Dangerous Pathogens" have also been emphasized. Two doctoral study programmes (PhD – epidemiology and medical microbiology) are certified by the Czech Governmental Commission. Since 1990, more than 30 students have finished their PhD studies in the department. The department has state accreditation for habilitation and for professorial appointment in two medical branches: Hygiene, Preventive Medicine and Epidemiology and Medical Microbiology.

The Department of Epidemiology plays an important role in education, training and consultancy related to biological threats/weapons and preventive medicine.

The members of the department participate in training and education of medical and other personnel dispatched in military peacekeeping and humanitarian missions abroad. The aim is to inform them about any health risks during staying abroad, especially about prevention of infectious diseases, possibilities of vaccination or chemoprophylaxis. They also provide both consultancy service prior to the departure abroad and a practical realization of the respective measures. The Department of Epidemiology provides an epidemiological service for the Field Hospitals of the Czech Army.

Research activities have concerned seroprevalence studies (e.g. Pertussis, Viral hepatitis C, Measles, Mumps, Hantavirus, Q-fever), testing the antimicrobial activity of the new compounds, molecular genetic analysis of herpes viruses.

Members of the department are members of journal's editorial boards (e. g. Epidemiologie, mikrobiologie a imunologie – prof. Splino; Military Medical Science Letters, Vaccines and Immunology, and Vakcinologie – prof. Chlibek; Annals of Infectious Disease and Epidemiology – doc. Bostikova), and they work as reviewers of international journals as well (Vaccine, Lancet Infectious Disease). Some of them work in a number of committees and boards: European Centre for Disease Control and Prevention (prof. Chlibek) or Central European Vaccination Awareness Group-CEVAG (prof. Chlibek).

Members of the department are also members of NATO working groups and advisory committees for biological threats and weapons (BIOMEDAC – Biological Medical Advisory Committee – prof. Chlibek) and NATO-Research&Technology Organisation (prof. Chlibek). Prof. Bostik is a CZ representative to the EDA advisory Capability&Technology group CBRN and Human Factors and also an active member of the NATO LTSS HFM-273 group.

Disinfection, disinsection and rodent control are very important parts of the medical practice in the Czech Army. This department is the only one of its kind in the Czech Army for the assessment of the antimicrobial efficacy of disinfectants or new antimicrobial agents.

## **RESEARCH PROJECTS**

### **Decontamination by carbohydrate lectin affinity wipes**

Stulík, J., Kubelková, K., Macela, A., Myslivcová, A., Kročová, Z., Schmidt, M.

Supported by the European Defence Agency, 2015–2017 (Project No.: A-1152-RT-GP)

The DCLAW strategy will fill the need for a highly man-portable, broadly-specific and high throughput decontamination method that is safe, and presents minimal risk to military and defence equipment and personnel. We will deliver a novel, environmentally-friendly system based on known sugar-based capture mechanisms used by many types of biotoxins and microbes. The DCLAW system will utilize this innovative strategy to decontaminate physical and biological surfaces and capture the pathogens and toxins using sugar-protein coated self-contained applicator cloth or wipes.

### **Development of novel disinfectants against pathogens occurring in the hospital environment**

Soukup, O., Marek, J., Boštík, P., Boštíková, V.

Supported by the Internal Grant Agency of the Czech Republic Health Service, 2015–2018 (Project No.: NV15-31847A)

In this project, we would like to develop new compounds based on quaternary ammonium salts with a strong disinfectant potential against nosocomial infections in hospital environment, thus bacterial, fungal and viral pathogens. The project is designed for development of various (3-6) mixtures with strong disinfecting properties and wide spectrum of efficacy by combining individual agents with more specific efficacy. Developed mixtures also should not exert skin irritation at operating personnel, which will be ensured by in vitro and in vivo skin tests. Furthermore, variability of the mixtures and their alternating application should represent a tool for the controlling of microbial resistance. In this project, basic research (9%)

represent the synthesis of novel compounds and the structure-biological activity relationship (SAR) evaluation. Applied research (91%) represents majority of the project, thus, the funnel-like selection of a drug candidates, their in vivo safety validation and subsequent patent protection application with subsequent application for patent protection.

### **Humulus Lupulus L. - source of substances with antimicrobial effect**

Olšovská, J., Čermák, P., Boštík, P., Kolář, M.

Supported by the Czech Republic Grant Agency, 2014–2016 (Project No.: GA14-10233S)

The increasing number of pathogenic strains of microorganisms resistant to different types of antibiotics has become a major current medical problem. Secondary metabolites of hops (*Humulus lupulus*) have been recently described in many studies as potent antimicrobial agents against a range of microorganisms. The aim of this project is to broaden the scope of biomedical applications of these compounds, especially prenylflavonoids. For this reason, a profiling method for highly detailed metabolomic study of many hops varieties using UHPLC-Q/Orbitrap method will be developed. The structures of unknown and little known metabolites will be elucidated. Antimicrobial effects of crude extract, separated fractions and purified metabolites will be studied on various strains of viruses, aerobic bacteria, facultative anaerobic bacteria, and anaerobic bacteria. State-of-the-art sample pre-treatment techniques (for example QuEChERS) will be used for sample purification and pre-concentration.

### **The role of virus associated cellular proteins in T-lymphocyte dysfunction**

Boštík, P., Řehulka, P., Pejchal, J., Boštíková, V., Kročová, Z.

Supported by the Czech Republic Grant Agency, 2010–2016 (Project No.: GAP304/10/1161)

Herpetic viruses, such as VZV, and lentiviruses, such as HIV or SIV, are enveloped viruses, which infect CD4 T cells and cause transient (VZV) or progressive (SIV) dysregulation of T cell function. This effect is mainly indirect, as the fraction of infected cells is small, but the dysregulatory effect is observed in much larger cell population. These viruses incorporate host-derived proteins into their envelopes during the process of virus maturation and these proteins can either retain their function or engage their receptors and subsequently initiate intracellular signaling. This can be mediated by Akt-GSK3 pathway and PGE metabolism, leading to T cell dysfunction and apoptosis. This proposal utilizes state-of the art proteomic approach to identification of host cell proteins incorporated into the SIV and VZV virions. The role of these host cell proteins will be subsequently investigated in their effects on CD4 T cell signaling cascades and can therefore lead to the



elucidation of mechanisms involved in CD4 T cell dysfunction and death in such diseases as chickenpox and AIDS.

**Monitoring of antibiotic resistance in selected causal agents of nosocomial infections**

Bareková, L., Hanovcová, I.

Supported by the Ministry of Education, Youth and Sports, 2014–2016 (FMHS Specific Research)

The aim of the study is defining the microbial agents and sources of the healthcare-associated hospital-acquired blood stream infections (HA-BSI), describing the occurrence of antimicrobial resistance to the specific groups of antibiotics at the most frequently isolated pathogens and monitoring the occurrence of multiresistant strains (MRSA, ESBL positive Gram-negative rods). On the base of reached results and comparison of the strains isolated from patients, health care personnel and environment will be recommended changes in hygiene regime on the ward with confirmed nosocomial infections to protect their spread.

**Molecular epidemiology of hantavirus infection**

Zelená, H., Smetana, J.

Supported by the Ministry of Education, Youth and Sports, 2014–2016 (FMHS Specific Research)

Search natural foci of hantaviruses in different locations in the Czech Republic selected on the basis of the reported cases of hantavirus infection in the population. Serological and molecular genetic diagnosis hantaviral infection in patients, detection and molecular genetic analysis of patient samples and trapped rodents in areas of probable infection. Genetic and ecological characterization of hantaviruses and their hosts, the evaluation of the relationship between the clinical course of the disease and genotype of hantaviruses.

**Epidemiology of chronic hepatitis C virus infection and the quality of life in patient treated by Pegylated interferon alfa-2a with ribavirin**

Dyrhonová, M., Chlábek, R.

Supported by the Ministry of Education, Youth and Sports, 2014–2016 (FMHS Specific Research)

A cohort study of patients with chronic hepatitis C comparing the quality of life at the basic diagnosis, before and during treatment of hepatitis C. Before treating the sick are divided according to the path of transmission of the disease, to patients with psychiatric illness, with stigma and concealment of disease. Evaluation of the trial should also contribute to enhance adherence to treatment.

## **DEPARTMENT OF MILITARY MEDICAL SERVICE ORGANIZATION AND MANAGEMENT K-302**

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**The Department of Military Medical Service Organization and Management** is the primary department which offers military and professional training for the students of the Faculty of Military Health Sciences, particularly in the field of military medical service support in operations, disaster medicine, crisis management, emergency planning and

psychology. Other covered subject areas are military history, military tactics & logistics, military communication, topography and NBC defence. The Department organizes follow-up education for military doctors, stomatologists, pharmacists and bachelors in advanced courses. Likewise, it offers specialized training and refresher courses for paramedical personnel to the extent necessary to carry out required medical duties in military operations e.g. military medical service organization, medical evacuation and crisis intervention. It participates in preparation of non-medical personnel located within the HQ and staff of the military medical units and facilities. It carries out training in medical support planning, working with maps, deployment of field medical facilities, calculation of medical casualties and military medical units command, control and cooperation.

The subject „Organization and Tactics of the Medical Service“ makes students acquainted with terms and conditions of the medical service during wartime and in foreign operations, identifies tasks and principles of medical support and medical C2 issues that are fundamental to comprehension and correct application of knowledge in terms of other military medical branches. It familiarizes students with the principles followed from NATO documents and standardization agreements.

The Department's primary aim is to pass the knowledge on to students, develop their habits and skills to fulfill basic tasks and duties arising from their planned command functions. It is involved in preparation of medical personnel prior to deployment. The Department provides knowledge and passes previous experience on to control authorities and executive facilities of the medical services in crisis, a war or other emergency situations as well as in humanitarian missions. It applies the knowledge of military subjects to specific environment of medical service, respecting both military principles and requirements as well as the principles of International Humanitarian Law.

The research work of the Department focuses on improving the quality and efficiency of organization and management of the medical service in accordance with military doctrine of the Czech Republic. It contributes in optimization process of the organizational structure of the medical units, departments and facilities, elaborating principles of their operations and methods of their control during a war. It develops materials and proposals from these areas for conceptual authorities of the ACR Medical Service, including NATO STANAG assessment reports in terms of their ratification and options of implementation.

The Department is an expert guarantor in the field of military medical service organization and management. It provides expert statements for the Ministry of Defence and Military Medical Agency and gives consultations to managers of all military medical service levels.

## **DEPARTMENT OF RADIOBIOLOGY K-303**

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**The Department of Radiobiology** was established at Purkyně Military Medical Research and Postgraduate Institute on September the 1st 1963. The first chief of the department became Colonel Prof. MUDr. Josef Mráz, CSc., who was in 1968 appointed the first professor of military radiobiology of the Charles University. The main tasks of the department are teaching and research activities, which are closely connected.

In the field of research, the experimental work includes histology and cytology, in vitro methods, methods of proteomic analysis and methods of flow cytometry. Individual technological units allow in vitro and in vivo observation of post-radiation mechanisms on molecular, cellular, and organ levels.

Military research is focused on early diagnosis and therapy of post-radiation damage as the main objective of the department. The aim of investigation in the medium-term horizon is discovery and practical introduction of bio-dosimetry markers, study of molecular mechanisms of radiation-induced DNA damage repair, development of radioprotection agents as well as continuous renewal of decontamination agents for the Army of CR. Mutual cooperation with other NBC research workplaces also remains an integral part of our research activities. Cooperation with civilian workplaces at the Faculty of Medicine and the University Hospital in Hradec Králové is focused on radiation oncology.

The Department of Radiobiology takes part in military medical-specialist education in the form of pre-gradual and post-gradual education mainly in doctoral studies. The main educational activity is lecturing military radiobiology. The main topics are: the nuclear weapons effects on the living organism, the possibilities of the protection and medical treatment of irradiated persons. Other specific military issues are disaster medicine, NBC protection etc., which are taught at the Faculty of Military Health Sciences, including the topics, which are presented by the instructors of our department.

## **RESEARCH PROJECTS**

### **The role of virus associated cellular proteins in T-lymphocyte dysfunction**

Boštík, P., Řehulka, P., Pejchal, J., Boštíková, V., Kročová, Z.

Supported by the Czech Republic Grant Agency, 2010–2016 (Project No.: GAP304/10/1161)

Herpetic viruses, such as VZV, and lentiviruses, such as HIV or SIV, are enveloped viruses, which infect CD4 T cells and cause transient (VZV) or progressive (SIV) dysregulation of T cell function. This effect is mainly indirect, as the fraction of infected cells is small, but the dysregulatory effect is observed in much larger cell population. These viruses incorporate host-

derived proteins into their envelopes during the process of virus maturation and these proteins can either retain their function or engage their receptors and subsequently initiate intracellular signaling. This can be mediated by Akt-GSK3 pathway and PGE metabolism, leading to T cell dysfunction and apoptosis. This proposal utilizes state-of the art proteomic approach to Identification of host cell proteins incorporated into the SIV and VZV virions. The role of these host cell proteins will be subsequently investigated in their effects on CD4 T cell signaling cascades and can therefore lead to the elucidation of mechanisms involved in CD4 T cell dysfunction and death in such diseases as chickenpox and AIDS.

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The Department of Toxicology was established in 1951. Since then, as an integral part of the Faculty of Military Health Sciences, it has been involved in education and scientific research work on chemical warfare agents for defensive and protective purposes only.

**The Department of Toxicology and Military Pharmacy** was established on the 1st September 2014 by integration of Department of Toxicology, Centre of Advanced Studies and Department of Public Health. It comprises two groups – a military pharmacy group (biochemical laboratory, laboratory of organic synthesis, analytical laboratory, decontamination laboratory) and a toxicology group (toxicological laboratory, pharmacological laboratory, neurophysiological laboratory, neurobehavioral laboratory, laboratory of cell toxicology). This structure permits the complex study of highly toxic substances including chemical warfare agents with aims to determine their action on biochemical, neurobehavioral, histochemical, pharmacological and neurophysiological level, to study and develop antidotes, to analyze all types of samples with respect to the presence of known chemical warfare agents, to test decontamination effectiveness of developed and field decontamination kits. Present scientific research projects are focused on therapeutic, prophylactic and protective measures against the most toxic chemical warfare agents. Special attention has been paid to the most recent and most dangerous nerve agents and mustards.

The main educational activity task was to give lectures for undergraduate and post-graduate studies dealing with problems of biological effects of real and potential chemical warfare agents, the possibilities of the medical and chemical protection against them and the approaches to medical care of persons intoxicated with chemical warfare agents, especially nerve agents. The department provides and guarantees the teaching master's degree program military pharmacy and also participates in the teaching of toxicology in disaster medicine.

## **RESEARCH PROJECTS**

### **Concept of non-quaternary reactivators AChE as the antidotes of organophosphorus poisoning - a new hope or a blind way?**

Kuča, K., Jun, D.

Supported by the Czech Republic Grant Agency, 2015–2017 (Project No.: GA15-16701S)

Acetylcholinesterase (AChE) reactivators based on pyridinium aldoximes (obidoxime, HI-6) are used as causal antidotes in case of nerve agent or pesticide poisonings. Due to the presence of quaternary nitrogen, they have low blood-brain barrier (BBB) permeation and thus they are not capable to fully reactivate AChE in the central nervous system, where nerve agents or pesticides can be responsible for the chronic neural disorders. For this reason, development of novel centrally acting non-quaternary reactivators that can more efficiently cross BBB is one of the most promising strategies. However, from the practical point of view, several drawbacks of physico-chemical, pharmacological and toxicological origin are expected for these non-quaternary antidotes. In this project, all the benefits and negatives of non-quaternary AChE reactivators will be investigated to decide whether this new strategy is a really promising approach or just another blind way in the search for the new type of antidotal therapy.

## **Cooperation**

In 2016, the Department of Toxicology and Military Pharmacy has continued in the cooperation, started by the Institute of Pharmacology and Toxicology of Federal Armed Forces Medical Academy in Munich (Germany), Swedish Defence Research Agency, in Umea (Sweden), Armed Forces Biomedical Research Institute in Brétigny-sur-Orge (France), Saint Louis Hospital in Paris (France), Universidade Federal de Santa Catarina in Florianopolis (Brazil), Pandit Ravishankar Shukla University in Raipur (India), Faculdade de Farmácia in Salvador (Brazil), DRDC in Suffield (United Kingdom), Health Protection Agency in Porton Down (United Kingdom), FFI in Kjeller (Norway), Gulhane Military Medical Academy in Ankara (Turkey), Military Medical Academy in Belgrade (Serbia), Institute for Medical Research and Occupational Health in Zagreb (Croatia), United Arab Emirates University in Al Ain (United Arab Emirates), Korea Research Institute of Chemical Technology in Daejeon (South Korea), Semmelweis University in Budapest (Hungary), Institute of Molecular Systems Biology in Zurich (Switzerland), M. V. Lomonosov Moscow State University in Moscow (Russia), Walter Reed Army Institute of Research in Silver Spring (United States of America), WIHE in Warsaw (Poland), Sahlgrenska Academy, University of Goteborg (Sweden) – on the field of development of prophylactic and therapeutic means against nerve agents and organophosphorus insecticides. The cooperation has been mostly

characterized by the exchange of scientific information. Within the frame of the work dealing with the identification of the mechanisms of chemoprevention in the initial phases of mutagenesis and carcinogenesis, the Department of Toxicology has also continued in cooperation with the Institute Nutrition Research (Oslo - Norway) and the Institute of Experimental Oncology and the Slovak Health Care University in Bratislava (Slovak Republic). The cooperation with Department of Organic Chemistry, Institute of Chemistry, P. J. Šafárik University in Košice (Slovak Republic), Department of Biophysics, Institute of Experimental Physics, Slovak Academy of Sciences in Košice (Slovak Republic) and Faculty of Chemical and Food Technology, Slovak Technical University in Bratislava (Slovak Republic) and University of Bologna (Italy) is continuing in the field of the development of new potential therapeutic means against Alzheimer disease.

## **DEPARTMENT OF MILITARY SURGERY K-305**

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## **Structure and main tasks of the Department**

1. *Division of General Surgery*  
Šubrt Zdeněk – Head of the Group
2. *Division of Traumatology and Burns Treatment*  
Lochman Petr – Head of the Group

## **Main tasks**

- Undergraduate education of medical students
- Postgraduate training of military surgeons and other medical specialists
- Expertise and referential work for needs of the Czech Armed Forces
- Research in Military Surgery
- Preparation of medical health-care personnel before foreign missions of the Army of the Czech Republic

At present the **Department of Military Surgery** consists of two groups – the Group of General Surgery and the Group of Traumatology and Burns Treatment. Besides working at each Division of the Department of Surgery of the Teaching Hospital in Hradec Králové, members of the Department perform both, undergraduate courses in field surgery for students of the Faculty of Military Health Sciences, and postgraduate training of military physicians for their specialization exams in surgery and general medicine. The Department also participates in teaching of the Battlefield Advanced Trauma Life Support (BATLS) courses, disaster medicine and the first aid courses, organized by the Faculty of Military Health Sciences for the Czech Army members. Members of the Department participate in several specialised NATO working groups according to their expertise. Moreover, they are consultants of Surgeon General of the Czech Armed Forces. In the last several years, the Department has played important role in education

and training of personnel of field hospitals operating in foreign missions (Yugoslavia, Bosnia-Herzegovina, Albania, Iraq, Afghanistan). Members of the Department also took part in those missions. Research and publication activities are also essential part of the Department members' work.

### **Participation in a foreign mission**

- J. Páral – 11th Field Hospital, ISAF, Kabul, Afghanistan, 2002, 2011 (TSF)
- J. Páral – British Field Hospital, Op TELIC, Shaibah, Iraq, 2004
- P. Lochman – British Field Hospital, Op TELIC, Shaibah, Iraq, 2004
- J. Páral – Czech Field Surgical Team, International Medical Treatment Facility (Role 3) KAIA, Kabul, Afghanistan 2012
- J. Šimek – Czech Field Surgical Team, International Medical Treatment Facility (Role 3) KAIA, Kabul, Afghanistan 2012

### **National textbooks**

- Small atlas of dressing techniques (Páral), 1st ed. Prague: Grada Publishing, 2008. 240 p. ISBN 978-80-247-2255-9
- Acute mesenteric ischemia - Modern diagnostics and treatment of acute bowel ischemia (Páral), 1st ed. Prague: Grada Publishing 2012. 112 p. ISBN 978-80-247-3996-0
- Handbook of surgery (Šubrt), 2nd ed. Prague: Grada Publishing 2015. 512 p. ISBN 978-80-247-1005-1

### **International textbooks**

- Gastrointestinal Stromal Tumors (Páral) in *Aperelho Digestivo* (Coelho), Editora Atheneau, Sao Paulo, Brasília, 2012, p. 325–336. ISBN 978-85-388-0296-9

## **RESEARCH PROJECTS**

### **Nanofibrous biodegradable small-diameter vascular bypass graft**

Lukáš, D., Páral, J., Kaláb, M.

Supported by the Internal Grant Agency of the Czech Republic Health Service, 2015–2018 (Project No.: NV15-29241A)

Materials that are currently used to fabricate vascular prostheses are non-degradable and thrombogenic. The aim of this project is to develop new tubular degradable scaffold made of nanofibers with three-dimensional double-layered structure. Biodegradable polymers will be electrospun to

obtain nanofibrous vascular graft with desired properties. Inner layer will be made from thin fibers that will facilitate endothelial cell spreading from adjacent vessel. Outer layer will be composed of thicker fibers to enable smooth muscle cell infiltration into the 3D structure as in native vessel. These double-layered scaffolds will be tested mechanically to meet all requirements for vascular replacement in terms of tensile strength, elongation and suture retention. The graft will be tested in vitro in static and dynamic conditions in bioreactor using endothelial and smooth muscle cells. The tissue remodeling process following the implantation will be predicted by macrophage polarization testing. Further in vivo tests will be carried out to investigate the patency of produced grafts.

## **DEPARTMENT OF MILITARY INTERNAL MEDICINE AND MILITARY HYGIENE K-306**

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The department is divided into group of Military Internal Medicine and the group of Military Hygiene.

### **Military Internal Medicine**

The group of Military Internal Medicine is the clinical part of the department systematically focused on specialized part of Internal Medicine – Military Internal Medicine. Military Internal Medicine as a sub-speciality of Internal Medicine has been progressively developed into a recent shape and purpose in accordance with latest trends of military health support and modern therapeutic approaches. Military Internal Medicine provides knowledge of and practical experience with treatment of life-threatening non-surgical impairment in specific conditions of the military, especially during the armed conflicts. Nowadays, Internal Medicine is also of increasing importance in postoperative care, where multidisciplinary approach leads to improved prognosis of the most severe surgical affections. Furthermore, the knowledge of and practical experience with Military Internal Medicine are useful also in peacetime, especially in large-scale disasters – catastrophes. In fact, most of the skills obtained by Military Internal Medicine training are useful in a novel and progressive branch of medical specialization – **Disaster Medicine**.

Military Internal Medicine has been further developed into 3 basic branches: therapeutic-preventive, pedagogical-educational and research-scientific.

**The therapeutic-preventive branch** is the essential part of Military Internal Medicine. It provides specialized knowledge of and experience with treatment of the most severe medical affections. The group of Military Internal Medicine cooperates with internal departments of the University Hospital in Hradec Kralove, which provides its therapeutic and educational background.

### **Military Hygiene**

The branch of Military Hygiene monitors the living and working conditions of troops with the aim to develop, propose and assert measures for health protection and promotion of military professionals in order to maintain a good health state of troops and combat capability of the Army of the Czech Republic personnel in difficult conditions of military environment. In accordance with this function, the activity of the group of Military Hygiene is aimed at monitoring the impact of environmental factors on the organism, at evaluating their risk in working and living environment and at setting effective preventive measures to protect and promote health of soldiers.

Currently, the group of Military Hygiene complexly covers the basic issues of the relation of life and job environment to health of the individual.

The group can provide the analysis of selected physical and chemical factors of external environment in the conditions of the Army of the Czech Republic. It studies the possibilities of use of chemical substances for disinfection effects. The group is focused above all on response of the organism to work in protective clothing and severe climatic conditions and on evaluation of the degree of risk connected with environment contamination.

In the area of group of Military Hygiene, attention is paid namely to the incidence and prevalence of risk factors of non-infectious diseases of mass incidence, rational food, catering of troops in peacetime and wartime conditions – emergency food rations, assessment of the proper received and consumed energy.

### **Cooperation**

- Charles University, Faculty of Medicine in Hradec Kralove
- University Hospital in Hradec Kralove
- Institute for Postgraduate Medical Education in Prague
- Central Military Hospital – Military University Hospital Prague
- Military Medical Agency of the Army of the Czech Republic
- Health Institute in Hradec Kralove
- Hygienic Station in Liberec
- Military Health Institute in Prague
- Agricultural University in Nitra, Slovakia

## **TEACHING**

### **Military Internal Medicine**

**The pedagogical-educational branch** activities in Military Internal Medicine are closely related to therapeutic-preventive care. The department provides comprehensive education of Internal Medicine and Military Internal Medicine in both undergraduate and postgraduate degree programmes. Almost all military medical specialists in Internal Medicine, including both Czechoslovakian and Czech Army members, completed their postgraduate education of Internal Medicine at our department and gained specialization degree in Internal Medicine. We are proud to announce that during the history of our department, we assisted more than 1500 physicians in gaining the specialization degree in Internal Medicine.

Nowadays, the educational process involves undergraduate education in the programme of Military Internal Medicine, Military Dentistry, Military Pharmacy and Military Health Assistant. The group of Military Internal Medicine participates actively in teaching in specialized courses, such as BATLS (Battlefield Advanced Trauma Life Support) and also provides medical support during specialized training operations of various units of the Army of the Czech Republic. In cooperation with the Internal Department of the Military University Hospital in Prague and internal departments of other military hospitals, the department provides necessary background for physicians in the military in order to gain the medical postgraduate certification in Internal Medicine.

Important and highly demanding assignment of the department is management and support of doctoral study programme of Military Internal Medicine. This study programme has been accredited since 1993. The department is also accredited for associate professor and professor degrees proceedings in the field of Military Internal Medicine.

### **Military Hygiene**

The group of Military Hygiene takes part in pregraduate education of military hygiene and preventive medicine for all military students of the Faculty of Military Health Sciences included civilian students of the Faculty of Health Sciences in Pardubice.

The group members participate in teaching at Charles University, the Faculty of Medicine in Hradec Kralove and cover the final exam in hygiene, military hygiene and epidemiology.

The group can provide education of hygiene and preventive medicine in the doctoral study program Preventive medicine and health care.

The group is engaged in education of hygiene and preventive medicine of civilian and military doctors and nurses including education of members of NATO missions.

The group cooperates with the Military Academy in Vyskov and ensures education and special training of the employees of the Ministry of Defence in the field of occupational hygiene , occupational medicine and risk prevention.

## **RESEARCH**

### **Military Internal Medicine**

**The scientific-research branch** is the third main part of the group of Military Internal Medicine. In general, the department is focused on clinical research in internal medicine and its implementation in specific military practice. The research is aimed to cover requirements of the Army of the Czech Republic including field and foreign military operations.

The shape of our recent research activities was formed together with the development of organization structure of the department. The long history and development of our department was connected with the development of public society, the Army and both schools in Hradec Kralove: the University of Defence, the Faculty of Military Health Sciences and Charles University, the Faculty of Medicine.

#### **Main topics are:**

- New trends in transplantation of hematopoietic stem cells and supportive care
- Optimization and individualization of treatment of disorders involving bone marrow and hematopoiesis, especially research in acute leukemias as a “model disease“
- Monitoring of side effects during treatment of hematologic disorders using various novel biochemical markers, especially for evaluation of cardiac toxicity
- Cardiovascular research with focus on acute coronary syndromes, heart failure and valve disorders
- The role of enteral and parenteral nutrition in intensive care
- Participation in international clinical trials, especially in fields of hematology and cardiology

**Cooperation in clinical research**

1. Hematopoietic stem cell transplantation (HSCT), transplant-related complications and supportive care, the role of cytokines, cytokine receptors and adhesion molecules in HSCT and acute leukemia – the project has continued.
2. Complex monitoring of cardiotoxicity of antitumorous treatment, mainly cardiac biomarkers – the research project has continued.
3. New biochemical markers of cardiac injury (natriuretic peptides, cardiac troponins, heart-type fatty acid binding protein, glycogen phosphorylase BB) – clinical and laboratory evaluation has continued.
4. Analysis of transplantation activities, indications and results in the Czech Republic – the National Stem Cell Transplantation Registry – the project has continued.
5. A study on application of enteral and parenteral nutrition in intensive metabolic care – the research project has continued.
6. An open-label, randomized phase 3 study of Inotuzumab Ozogamicin compared to a defined investigator's choice in adult patients with relapsed or refractory CD22-positive acute lymphoblastic leukemia (ALL). (Protocol number: B1931022).
7. A phase 3, randomized, open label study investigating the efficacy of the BiTE antibody Blinatumomab versus standard of care chemotherapy in adult subjects with relapsed/refractory B-precursor acute lymphoblastic leukemia (ALL). (Protocol number: AMG 103 00103311).
8. Academic studies of the Czech Hematology Society and the Czech Leukemia Study Group – for Life.

**Military Hygiene**

Scientific research is focused on primary prevention of chronic diseases and relation of life and job environment and life style. Realization of intervention study and project is focused on healthy status of professional soldiers.

**Main topics are:**

- Epidemiological studies of non-infectious diseases
- Evaluation of nutritional and healthy status
- Evaluation of energetic and metabolic requirements
- Combat rations in different climatic conditions
- Evaluation of response of the organism to work in unfavourable environmental and working conditions

- Evaluation of working energy expenditure
- Evaluation of physiological function in protective suits
- Elaboration of proposals for working and rest regimes, energy, fluids and minerals as a prevention of diseases

## **RESEARCH PROJECTS**

Long-term organization development plan 1011 – Clinical branches

Specific Research Project “The impact of cytokines and adhesion molecules on prognosis of acute myeloid leukemia patients”

Specific Research Project “The use of parenteral nutrition with a specific dose of glucose and lipids in patients in intensive care unit”

## **DEPARTMENT OF EMERGENCY MEDICINE AND MILITARY GENERAL MEDICINE K-307**

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History of the Department started in 1983 at the J. E. Purkyně Military Medical Research and Postgraduate Institute. First as a Group of Military Medical Service Organization in Peacetime which was a part of the Department of Military Medical Service Organization. With increasing demands on training of the military health personnel, the Department of General Medicine was established. First Specialization Exams in this new basic specialization branch were held in February 1985. 525 military doctors passed the Specialization Exam in General Medicine at the Department of General Medicine till 31st December 2004. Now the Department collaborates in Specialization Exam with the Institute of Postgraduate Medical Education



in Prague, the Chamber of Medicine, professional medical societies and associations in postgraduate training and specialized activities. It participates in establishing standards for special therapeutic care.

Since 1997, the work at this Department has focused more on pre-hospital emergency care and teaching the First Aid and Emergency Medicine. At the same time a significant modernization and a proper subdivision of teaching premises according to the type of courses were carried out there. Now the Department is equipped with modern teaching models and simulators for teaching pre-hospital care, including the possibility of interactive teaching aids. Current innovations of medical material and equipment are applied in teaching process.

The Military Medical Service after the entry into NATO was one of the main contributors of the Czech Armed Forces to this international military organization. The Department of General Medicine and Emergency Medicine has been charged with specialization training of the military health personnel deployed on foreign mission. The extension of teaching activities in this new field called for changes in table posts at the Department. In 2001, the Healthcare Education and Training Group was established and other workers were engaged to teach the first aid. Since 2003, regarding the extension of teaching, the Department has had a new name – the Department of General and Emergency Medicine.

A new period of the Department started in 2014. After restructuring of the University of Defence and the Faculty of Military Health Science together with prevailing teaching topics in urgent medicine, the Department was renamed on **the Department of Emergency Medicine and Military General Medicine**. It consists of two groups – the Group of Emergency Medicine and the Group of General Medicine.

The main mission of the Department is education and training of medical officers in casualty medical care in both combat and disaster situations. For this purpose, the principles and procedures of emergency care in field conditions are taught at the Department through BATLS/BARTS (Battlefield Advanced Trauma Life Support/Battlefield Advanced Resuscitation Techniques and Skills) courses. In the same area, the Department participates in training of medical personnel before their departure to foreign missions. The next important mission of the department is education and training of non-medical personnel in first-aid care. The most of the soldiers are trained in the Battlefield First-Aid Courses, some of them are trained in consequential Combat Life Saver Courses. This course offers a lot of useful knowledge and skills, e. g. control life-threatening external hemorrhage, airway management and decompress the chest.

The Department of Emergency Medicine and Military General Medicine is the main department providing military-professional training in the subject called Military Medical Service Organization in Peacetime for students of the

Master's Study Programme in branches of General Medicine and Military Pharmacy, and for students of the Bachelor's Study Programme in the branch of Military Medical Management and in various types of training and courses. It also provides further education for military doctors, pharmacists and other personnel of the Military Medical Service through refresher courses and specialization courses.

The subject called Disaster Medicine makes students acquainted with principles of emergency medicine and operation of individual parts of integrated rescue system in conditions of serious accidents, natural disasters and catastrophes. In connection with this training, the Department provides its participants with knowledge and experience of the operation of the Military Medical Service institutions and facilities in crisis, in combat or other extraordinary situations. It applies the knowledge of military and military-professional subjects into specific conditions of operation of the Military Medical Service respecting both military principles and requirements as well as the principles of humanity, law and especially Geneva Conventions.

The Department is a co-ordinating centre in the branch of Military Medical Service Organization in Peacetime, Social Medicine, Emergency Medicine and Disaster Medicine. It participates in increasing the quality of organisational structure of medical units, formations and facilities. It elaborates their operation procedures and principles of their management in peacetime as well as in emergency situations. The Department provides expert activities and elaborates data and proposals from these areas for concept-making bodies of the Czech Army Medical Service. The Department analyzes NATO regulations and directives and recommends their introduction in practice as well as in teaching process. It provides consultations for field leading officers of the Military Medical Service. The Department cooperates with civilian institutions, namely, with the bodies of the Ministry of Health of the Czech Republic in the issues concerning the cooperation between civilian and military medical services in extraordinary situations. It ensures publication activities focused on educational work requirements and on presenting scientific information. The Department is in charge of the education of talented students within the framework of students' scientific and professional activities. It participates in the solution of assignments within the organizational structure of the military health care in peacetime. It is the consultation and expert workplace in the branch of General and Emergency Medicine for the Army of the Czech Republic.

## **DEPARTMENT OF MOLECULAR PATHOLOGY AND BIOLOGY K-308**

### **Educational and Research Staff**

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### **Technicians**

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ŽÁKOVÁ Jitka	jitka.zakova@unob.cz



approaches for identification of new biomarkers of different pathological processes. Laboratories of the Institute are currently equipped for realization of complete classical and shotgun proteomic analyses. The materials for analyses are prepared in the Institute's tissue culture and microbiological labs. In parallel, the basic search for gene expression can be performed using quantitative real-time PCR technology. The established technologies enable researchers, PhD. students, and under-graduate external (and internal, modulatory) signals encompassing the chemicals, biologically active bio-molecules, physical influences (temperature, radiation, etc.), and microorganisms.

The Department traditionally cooperates with the research facility in Sweden (Dept of Clinical Bacteriology and laboratory for Molecular Infection Medicine, University of Umea) on identification of new factors of virulence of *Francisella tularensis*, molecular mechanisms of suppression of interferon beta production in host cells infected by *Francisella tularensis* and on the analysis of possible interaction between host and bacterial proteins. Further important collaborations concern U.S. Army Medical Research Institute of Infectious Disease (Fort Detrick, USA) – preparation and testing of bacterial proteins with immunostimulatory potential, Department of Microbiology and Parasitology, University of Rijeka – microscopical analysis of microbial intracellular trafficking, proteome analysis of phagosomes isolated from infected host cells, and, finally, Aquila Bioscience Ltd, National University of Ireland in Galway – identification of glycan or lectin structures recognizing bacterial carbohydrate structures with the aim of new decontamination tools development.

Within the frame of the Czech Republic, the Institute has useful contacts with the Institute of Microbiology and Institute of Molecular Genetics, Czech Academy of Science, Prague, the Faculty of Science, Charles University, Prague, the Faculty of Medicine and Faculty of Pharmacy Charles University, Hradec Králové, the University Hospital in Hradec Králové, Department of Pharmacology of Medical Faculty in Hradec Králové, Department of Oncological and Experimental Pathology Masaryk Memorial Cancer Institute, Brno and Veterinary Research Institute in Brno.

The financial support for research activities performed in the collaboration with above-mentioned Institutes comes from the programmes and projects of Czech Grant Agencies, Ministry of Education and Youth and Sports and Ministry of the Interior. Currently, the Department for Molecular Pathology and Biology has 14 full-time permanent employees, 2 half-time permanent employees, 13 scientists, 2 technicians and 1 administrative worker, 3 scientists are supported by grant agencies. The Department has currently 13 PhD students and, furthermore, several undergraduates have been working on their diploma thesis in the Institute.

## **RESEARCH PROJECTS**

### **Database of typing of biological agents - EBLN (European biodefence laboratory network)**

Kročová, Z., Dresler, J., Myslivcová, A., Kubelková, K., Dřevínek, M.

Supported by the Czech Republic Ministry of Internal Affairs, 2015–2016 (Project No.: VF20142015039)

The aim of this public contact is development and application of the modern bioanalytical techniques leading to the detailed characterization of the biological agents and toxins as well. The outcomes will be implemented into the database and will lead to the formation of the certified procedures for the precise typing of the biological agents in the case of need: a) precise identification of the biological agents or toxins b) differentiation between environmental occurrence and deliberate misuse c) help in the process of the revelation of the criminals of biological attacks

### **Decontamination by carbohydrate lectin affinity wipes**

Stulík, J., Kubelková, K., Macela, A., Myslivcová, A., Kročová, Z., Schmidt, M.

Supported by the European Defence Agency, 2015–2017 (Project No.: A-1152-RT-GP)

The DCLAW strategy will fill the need for a highly man-portable, broadly-specific and high throughput decontamination method that is safe, and presents minimal risk to military and defence equipment and personnel. We will deliver a novel, environmentally-friendly system based on known sugar-based capture mechanisms used by many types of biotoxins and microbes. The DCLAW system will utilize this innovative strategy to decontaminate physical and biological surfaces and capture the pathogens and toxins using sugar-protein coated self-contained applicator cloth or wipes.

### **The role of virus associated cellular proteins in T-lymphocyte dysfunction**

Bošтік, P., Řehulka, P., Pejchal, J., Bošтікová, V., Kročová, Z.

Supported by the Czech Republic Grant Agency, 2010–2016 (Project No.: GAP304/10/1161)

Herpetіc viruses, such as VZV, and lentiviruses, such as HIV or SIV, are enveloped viruses, which infect CD4 T cells and cause transient (VZV) or progressive (SIV) dysregulation of T cell function. This effect is mainly indirect, as the fraction of infected cells is small, but the dysregulatory effect is observed in much larger cell population. These viruses incorporate host-derived proteins into their envelopes during the process of virus maturation and these proteins can either retain their function or engage their receptors

and subsequently initiate intracellular signaling. This can be mediated by Akt-GSK3 pathway and PGE metabolism, leading to T cell dysfunction and apoptosis. This proposal utilizes state-of the art proteomic approach to Identification of host cell proteins incorporated into the SIV and VZV virions. The role of these host cell proteins will be subsequently investigated in their effects on CD4 T cell signaling cascades and can therefore lead to the elucidation of mechanisms involved in CD4 T cell dysfunction and death in such diseases as chickenpox and AIDS.

**The study of interaction of dendritic cells with intracellular pathogen *Francisella tularensis***

Stulík, J., Fabrik, I., Řehulka, P., Sheshko, V., Kročová, Z.

Supported by the Czech Republic Grant Agency, 2015–2017 (Project No.: GA15-02584S)

Tularemia represents renewed health problem due to its re-emergence in geographic areas with no previous tularemia experience and because of its bioterrorism threat. Disease is caused by a facultative intracellular pathogen *Francisella tularensis* that enters phagocytic cells or nonphagocytic cells in which successfully survive and multiply. However, the molecular mechanisms important for *F. tularensis* virulence are mostly unknown. Our goal is to employ the high-throughput “omics” techniques to identify host factors whose expression and posttranslational modification reflect re-programming process of dendritic cells by tularemic infection. The biological importance of identified components in host cell defense response will be verified using RNAi gene silencing. The acquired results should contribute to development of new strategies for diagnostics and therapeutics of tularemia.

## **VIVARIUM**

### **Educational and Research Staff**

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**The Vivarium** at the Faculty of Military Health Sciences of the University of Defence fulfils science, research and teaching tasks of the departments and specialized workplaces of the Faculty of Military Health Sciences. The vivarium is subordinated to the Vice-Dean for Research.

The separate vivarium for mice and sewer-rats is a part of the Department of Toxicology and Military Pharmacy.

From the point of view of the capacity the Faculty of Military Health Sciences is able to carry out experiments, place and take care of laboratory mice, sewer-rats, guinea-pigs, rabbits, pigs or mini pigs. In the area of the vivarium there are also laboratory workplaces and operating theatres, which are equipped for experiments on laboratory animals. All studies have to be allowed by the Ethical Board of the Faculty of Military Health Sciences fully in compliance with the legal standards of the protection against cruelty to animals.

The Vivarium with the operating block is intensively used above all for experiments on large experimental animals. The courses BATLS and BARTS are held there. During the courses different model situations and cases of emergency medicine are performed for military doctors and participants of foreign mission including war injuries on dead and live experimental animals.

On December 2015, the Vivarium was accredited for use again for 5 years (till January 2021) by the Central Board for Animal Protection.



The above-mentioned range of the activities shows that it is necessary to time work and also co-ordinate it personally including permanent presence of a veterinary surgeon, veterinary technicians and breeders of laboratory animals.

## **COMMUNICATION AND INFORMATION SYSTEMS OFFICE**

### **Educational and Research Staff**

KRUPÁR Jan  
(till 31 December 2016)

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### **Administrative, Secretarial and Other Staff**

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**The Communication and Information Systems Office** provides the top quality information service to ensure efficient scientific, research and teaching activities for teaching and research staff as well as under- and postgraduate students of our Faculty.

The Communication and Information Systems Office provides the operation of the faculty network, enables access to army, specialized and public information systems and supplies the needs of the Faculty with modern information technologies. Main activity is ensuring the access to INTERNET and to specialized information systems. Management of data network, central management of software, servicing as well as specialized support of users is also provided.

Part of the Communication and Information Systems Office are also graphic services that create graphic documents and posters for presentations, make arrangements and changes of drafts for printing, make

digital pictures and do other associated work. It also provides the operating and updating of the web site of the Faculty (<http://fvz.unob.cz>).

The printing-office of the Communication and Information Systems Office is able to cover reprographic and printing needs of the Faculty by its own sources in limited extent.

The library provides students, research and teaching staff of the Faculty of Military Health Sciences and members of the Czech Army Medical Service with scientific and information services. The main information services are provided by the library with 80 000 library units concerning medicine as well as associated branches.

Information sources in the field of military medicine, emergency medicine and disaster medicine are specificity of this library. The library enables access to various information databases (WoK, ScienceDirect, SCOPUS, SpringerLink, BiblioMedica, etc.) and provides systematic help when being used.

The library participates in teaching activities in the doctoral study programmes and scientific education (PhD) by giving lectures in Basics of Informatics focused on retrievals, processing and publication of scientific information.

## **VISITORS TO THE FACULTY OF MILITARY HEALTH SCIENCES**

### **Brazil**

- Prof. FRANCA Tanos Celmar Costa (Rio de Janeiro) – Presentation of the Institute and his scientific results, 06 December 2016–06 December 2016

### **Croatia**

- Prof. SANTIC Marina (Rjeka) – The preparation of a new international project, 02 May 2016–06 May 2016

### **Germany**

- LTC URBATSCHEK Mirko, MA (Munich) – Talks on the cooperation, 14 June 2016–14 June 2016
- SCHÖNECKER Sven (Reutlingen) – Visit of the Department of Toxicology and Military Pharmacy, 03 August 2016–03 August 2016

### **Hungary**

- COL VEKERDI Zoltán, MD, MAJ PETO Zsolt (Budapest) – Coordination Meeting of Vyszegrad Countries (V4) Surgeons General, 10 May 2016–10 May 2016

### **China**

- Assoc. Prof. Dr. WU Qinghua (Jingzhou) – Presentation of the College and his scientific results, 06 December 2016–06 December 2016

### **Ireland**

- Prof. JOSHI Lokesh, Dr. DEEGAN Shane, Dr. UTRATNA Marta (Galway) – Regular meetings in the framework of the project “Decontamination by carbohydrate lectin affinity wipes” supported by EDA, 04 April 2016–06 April 2016

### **Jordan**

- CAPT AL-TWAHEH Haytham, CAPT ALARQAN Osama, 1LT ALSEID Ghassan, 1LT AL-SHGEERAT Maen, SSG ABU SALAH Mohammad, SG AL-ZAWAHREH, Lu’ay (Amman) – BATLS Course, 10 October 2016–12 October 2016

## **VISITORS TO THE FACULTY OF MILITARY HEALTH SCIENCES**

### **Nigeria**

- M.B.B.S, M.Sc. HEDIMA Nenadi Clare (Kaduna) – Study stay, 17 October 2016–11 November 2016

### **Poland**

- COL ANTOSIEWICZ Stefan, MD, COL ŻMUDA Stanislaw (Warsaw) – Coordination Meeting of Vyszegrad Countries (V4) Surgeons General, 10 May 2016–10 May 2016

### **Republic of Korea**

- Dr JUNG Changhee, Dr KIM Suhyeon, Dr LEE Jin Young (Daejeon) – Scientific collaboration, 23 May 2016–23 May 2016

### **Serbia**

- Assoc. Prof. DJORDJEVIC Snezana, SGT MAJ1 GAGOVIC Jelena, SGT MAJ1 DJORDJEVIC Barbara, SGT MAJ1 ADAMOVIC Lazar (Belgrade) – an Exchange stay of students from the Military Medical Academy in Belgrade, 20 September 2016–30 September 2016

### **Slovakia**

- COL LENGVARSKÝ Vladimír, MD (Bratislava) – Coordination Meeting of Vyszegrad Countries (V4) Surgeons General, 10 May 2016–10 May 2016
- RNDr. PSOTKA Miroslav (Kosice) – Scientific collaboration, 29 July 2016–29 July 2016

### **Ukraine**

- COL CLOFA Taras, COL PLISH Bogdan, COL CHEHODAR Serhii, LTC RUDYNSKA Sofia, LTC DANISHEVSYI Mykola, MAJ KOVYDA Dmytro, MAJ MAKSIMENKO, Andrii, MAJ KRASNICHENKO Dmytro, MAJ FESIUK Oleksandr, CAPT OSTAPENKO Volodymyr, CAPT LOGGINOV Dmytro, 1LT MEDVIN Andrii (Kiev) – Course for medical experts, 21 February 2016–27 February 2016
- COL BONDAREVSKYI Andrii, MAJ TKACHENKO Andrii, CAPT GLUKHENKA Svitlana, 1LT KARPENKO Kostiantyn, 1LT HONCHARENKO Pavlo, LT GANIUK Vitalii (Kiev) – BATLS Course, 10 October 2016–12 October 2016
- KARPICHEV Yevgen A. (Kiev) – Presentation of the Institute and his scientific results, 06 December 2016–06 December 2016

## **VISITS ABROAD**

### **Austria**

- Plodr, M. (10th European Congress on Emergency Medicine, Vienna, 01 October 2016–05 October 2016)
- Řehulka, P. (27th MassSpec Forum Vienna, Vienna, 23 February 2016–24 February 2016)
- Smetana, J. (18th meeting of the International Scientific Working Group on Tick-Borne Encephalitis (ISW-TBE), Vienna, 27 January 2016–29 January 2016)

### **Belgium**

- Boštík, P. (CapTech CBRN EDA, Brussels, 24 October 2016–26 October 2016)
- Kassa, J. (38th NATO CBRN Medical Working Group Meeting, Brussels, 06 March 2016–11 March 2016)
- Pejchal, J. (38th NATO CBRN Medical Working Group Meeting, Brussels, 06 March 2016–11 March 2016)

### **Denmark**

- Horáček, J. (21st Congress of European Hematology Association (EHA), Copenhagen, 08 June 2016–12 June 2016)

### **France**

- Boštík, P. (NATO HFM-LTSS-273, Paris, 15 November 2016–18 November 2016)
- Klein, L. (4th ICMM Pan European Congress of Military Medicine, Paris, 23 May 2016–26 May 2016)
- Korábečný, J. (15th International Symposium on Cholinergic Mechanisms, Marseille, 16 October 2016–21 October 2016)
- Lierová, A. (Study stay, ERASMUS, LRTS – IRCM – CEA Fontenay aux Roses, Paris, 08 January 2016–30 April 2016)
- Misík, J. (15th International Symposium on Cholinergic Mechanisms, Marseille, 16 October 2016–21 October 2016)
- Soukup, O. (15th International Symposium on Cholinergic Mechanisms, Maresille, 16 October 2016–21 October 2016)
- Šepsová, V. (15th International Symposium on Cholinergic Mechanisms, Marseille, 16 October 2016–21 October 2016)
- Šinkorová, Z. (ADC and MMT WG meeting, Paris, 13 November 2016–19 November 2016)
- Šubrt, Z. (Verification – Robotic Surgery, Paris, 25 January 2016–26 January 2016)

- Zálybnická, L. (ADC and MMT WG meeting, Paris, 13 November 2016–19 November 2016)

**Germany**

- Ďuráčová, M. (15th Medical Biodefence Conference, Munich, 25 April 2016–29 April 2016)
- Humlíček, V. (DiMiMED, the International Conference on Disaster and Military Medicine, Düsseldorf, 14 November 2016–17 November 2016)
- Klimentová, J. (15th Medical Biodefence Conference, Munich, 25 April 2016–29 April 2016)
- Kročová, Z. (15th Medical Biodefence Conference, Munich, 25 April 2016–29 April 2016)
- Pavlík, V. (NATO Course, Oberammergau, 30 May 2016–03 June 2016)
- Zálybnická, L. (FNC Meeting of Academic Military Medical Education Representatives, Munich, 24 February 2016–25 February 2016)

**Greece**

- Kročová, Z. (13th International Conference on Innate Immunity, Rhodes, 22 June 2016–28 June 2016)
- Kubelková, K. (13th International Conference on Innate Immunity, Rhodes, 22 June 2016–28 June 2016)

**Hungary**

- Ďuráčová, M. (10th Central and Eastern European Proteomic Conference, Budapest, 11 October 2016–14 October 2016)

**Ireland**

- Kubelková, K. (DCLAW meeting, Dublin, 19 April 2016–19 April 2016)
- Stulík, J. (Professional Discussion within Solving Common EDA Project, Dublin, 01 December 2016–08 December 2016)

**Italy**

- Dušek, T. (ESCP – Eleventh Scientific and Annual Meeting, Milan, 27 September 2016–30 September 2016)
- Chlíbek, R. (Workshop entitled Vaccination of Older Adults and its Role in Healthy Ageing Strategies: Existing Gaps and Way Forward, Milan, 01 December 2016–02 December 2016)
- Jakl, M. (ESC Congress 2016, Roma, 26 August 2016–31 August 2016)
- Malý, O. (5th Congress of the World Union of Wound Healing Societies, Florence, 25 September 2016–30 September 2016)

## **VISITS ABROAD**

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- Řehulka, P. (34th Informal Meeting on Mass Spectrometry, Fiera di Primiero, 15 May 2016–18 May 2016)
- Řehulková, H. (34th Informal Meeting on Mass Spectrometry, Fiera di Primiero, 15 May 2016–18 May 2016)
- Tichý, A. (Exercise TRJE2016 : NATO Response Force – Joint Assessment Team – Radiologis, Naples, 23 October 2016–04 November 2016)

### **Norway**

- Klein, L. (Task Force on Quality Control of Disaster Management Meeting, Stavanger, 20 June 2016–25 June 2016)

### **Poland**

- Korábečný, J. (Support of the quality development of the subject "Military Toxicology". Negotiations concerning a cooperation on development of prophylactics against NPA, Krakow, 03 April 2016–03 June 2016)

### **Portugal**

- Boštík, P. (19th Annual Meeting of the European Society for Clinical Virology, Lisbon, 13 September 2016–18 September 2016)
- Boštíková, V. (19th Annual Meeting of the European Society for Clinical Virology, Lisbon, 13 September 2016–18 September 2016)
- Krutišová, P. (Improving teaching quality in the subject of Military medical service organization in peacetime, Porto, 22 October 2016–30 October 2016)
- Kupsa, T. (5th International Conference on Myelodysplastic Syndromes, Estoril, 13 April 2016–16 April 2016)
- Sleha, R. (19th Annual Meeting of the European Society for Clinical Virology, Lisbon, 13 September 2016–18 September 2016)

### **Serbia**

- Fink, M. (Exchange visit with Medical Academy in Belgrade – cooperation between schools, Beograd, 15 August 2016–26 August 2016)

### **Slovakia**

- Kassa, J. (TOXCON 2016: Contemporary Challenges in Toxicology Research, Stara Lesna, 22 June 2016–24 June 2016)
- Korábečný, J. (TOXCON 2016: Contemporary Challenges in Toxicology Research, Stara Lesna, 22 June 2016–24 June 2016)
- Misík, J. (TOXCON 2016: Contemporary Challenges in Toxicology Research, Stara Lesna, 22 June 2016–24 June 2016)



- Pavlík, V. (Erasmus, Nitra, 24 October 2016–28 September 2016)
- Pavlík, V. (Teaching at the Medical Faculty, Kosice, 11 December 2016–15 December 2016)
- Soukup, O. (TOXCON 2016: Contemporary Challenges in Toxicology Research, Stara Lesna, 22 June 2016–24 June 2016)
- Vrtišková, P. (Conference on „Social Processes and Personality“, Nový Smokovec, 11 September 2016–14 September 2016)

### **Spain**

- Horáček, J. (42nd Annual Meeting of the European Group for Blood and Marrow Transplantation (EBMT), Valencia, 02 April 2016–07 April 2016)
- Jebavý, L. (42nd Annual Meeting of the European Group for Blood and Marrow Transplantation (EBMT), Valencia, 02 April 2016–06 April 2016)
- Malý, O. (Internship for Young Scientists, Barcelona, 01 October 2016–30 October 2016)

### **Sweden**

- Kassa, J. (12th International Symposium on Protection against Chemical and Biological Warfare Agents, Stockholm, 08 June 2016–10 June 2016)
- Putzová, D. (Scientific Internship – University of Umea, Umea, 24 October 2016–26 November 2016)
- Řehulka, P. (15th Swedish Proteomics Society Symposium & SMSS Annual meeting, Gothenburg, 19 November 2016–23 November 2016)
- Sheshko, V. (Preparation of protein secretion system in *Francisella tularensis*, Umea, 17 October 2016–16 November 2016)
- Soukup, O. (Scientific Internship at The Norwegian Defence Research Establishment – FFI, Kjeller, 22 August 2016–19 September 2016)

### **The Netherlands**

- Čecháková, L. (42nd Annual Meeting of the European Radiation Research Society, Amsterdam, 04 September 2016–08 September 2016)
- Kmočová, A. (42nd Annual Meeting of the European Radiation Research Society, Amsterdam, 04 September 2016–08 September 2016)

## ***VISITS ABROAD***

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- Lierová, A. (42nd Conference of the European Radiation Research Society, Amsterdam, 04 September 2016–08 September 2016)
- Tichý, A. (42nd Annual Meeting of the European Radiation Research Society, Amsterdam, 04 September 2016–08 September 2016)

### **United Kingdom**

- Klein, L. (EBA Executive Committee Meeting, Birmingham, 25 September 2016–26 September 2016)
- Misík, J. (Special Project Technician Fellowship, Weybread, 01 September 2015–15 April 2016)

### **United States**

- Dušek, T. (AIBD 2016 Advances in Inflammatory Bowel Diseases, Orlando, 07 December 2016–10 December 2016)
- Korábečný, J. (Society for Neuroscience 2016 Annual Meeting, San Diego, 11 November 2016–18 November 2016)
- Kupsa, T. (58th Annual Meeting of American Society of Hematology (ASH), San Diego, 01 December 2016–07 December 2016)
- Páral, J. (AIBD 2016 Advances in Inflammatory Bowel Diseases, Orlando, 07 December 2016–10 December 2016)
- Plodr, M. (AIBD 2016 Advances in Inflammatory Bowel Diseases, Orlando, 07 December 2016–10 December 2016)
- Řehulka, P. (64th ASMS Conference on Mass Spectrometry and Allied Topics, San Antonio, 05 June 2016–09 June 2016)
- Soukup, O. (Society for Neuroscience 2016 Annual Meeting, San Diego, 11 November 2016–18 November 2016)

## **WORKSHOPS, COURSES, RESIDENCIES AT THE FACULTY IN 2016**

### **Military Hygiene**

- Specialized basic course – Teaching on foodstuff I, 29 March 2016–30 March 2016
- Specialized course – Prevention of non-infectious diseases of mass incidence, 14 March 2016–15 March 2016
- Specialized follow-up course – Teaching on foodstuff II, 24 October 2016–25 October 2016, 28 November 2016–30 November 2016
- Specialized course – Evaluation of workload and health protection at work, 31 October 2016–01 November 2016
- Specialised course – Nutrition state assessment, 18 January 2016–19 January 2016
- Specialised course – Health support programme – possibilities of prevention and intervention, 01 February 2016–02 February 2016
- Specialised course – Overweight and obesity, diagnosis, prevention and therapy, 29 February 2016–01 March 2016

### **Radiobiology**

- Specialized course – Radiation accident – protection and measures, 23 May 2016–24 May 2016

### **Language Courses**

- Combined language courses – English (STANAG 3), 07 September 2015–27 May 2016, 05 September 2016–26 May 2017
- Combined language courses – English (STANAG 2), 07 September 2015–27 May 2016, 05 September 2016–26 May 2017

### **Military Medical Service Organization**

- Specialized course – MS PowerPoint, 25 January 2016–27 January 2016
- Specialized course – Aeromedical evacuation, 12 April 2016–14 April 2016
- Specialized course – MS WORD, 11 January 2016–13 January 2016
- Specialized course – Prevention of burn out syndrom, 08 February 2016–10 February 2016, 31 October 2016–02 November 2016
- MEDEVAC specialized course – Use of helicopter, 03 October 2016–07 October 2016

## **WORKSHOPS, COURSES, RESIDENCIES AT THE FACULTY IN 2016**

- Specialized course – Psychology and crisis psychological interventions, management of patients with behavioral difficulties, 07 March 2016–09 March 2016
- Specialized course – MS Excel, 14 March 2016–16 March 2016

### **Military Epidemiology**

- Specialized course – Current infectious diseases – news in epidemiology and microbiology, 17 October 2016–19 October 2016
- Specialized course – Incidence and risks of infectious diseases in the Army of the Czech Republic and in the Czech Republic, 07 November 2016–09 November 2016
- Specialized course – Highly dangerous infections, new infectious diseases, 18 January 2016–20 January 2016

### **General Medicine**

- Specialized course – Battlefield Advanced Trauma Life Support (BATLS), 30 May 2016–01 June 2016, 05 December 2016–07 December 2016
- Specialized course – Teaching methodology of health training, 23 May 2016–27 May 2016
- Specialized course – Transportation of casualties in the field, 27 June 2016–01 July 2016
- Special course – Extended first aid in the field (CLS Course), 01 February 2016–12 February 2016, 29 February 2016–11 March 2016, 13 June 2016–24 June 2016, 21 November 2016–02 December 2016
- Specialized course – Battlefield Advanced Resuscitation Techniques and Skills (BARTS), 30 May 2016–01 June 2016, 05 December 2016–07 December 2016
- Specialized course – First aid in field conditions for military paramedics, 27 July 2016–29 July 2016
- Specialized course – Battlefield Advanced Resuscitation Techniques and Skills (BARTS) for foreign armies (Ukraine, Jordan), 22 February 2016–24 February 2016, 10 October 2016–12 October 2016
- Specialized course – Defibrillators and their operation, 28 January 2016–28 January 2016, 07 April 2016–07 April 2016, 02 June 2016–02 June 2016, 22 September 2016–22 September 2016
- Special course – Extended first aid in the field (CLS Course) for military paramedics, 29 August 2016–09 September 2016
- Specialized course – Battlefield Advanced Resuscitation Techniques and Skills (R-BARTS), 25 January 2016–27 January 2016, 04 April 2016–06 April 2016, 19 September 2016–21 September 2016

## **WORKSHOPS, COURSES, RESIDENCIES AT THE FACULTY IN 2016**

- Specialized course – Repetitory of first aid for non-medical personnel, 12 December 2016–14 December 2016
- Special course – Extended first aid in the field for the Police of the Czech Republic (CLS Course), 11 April 2016–22 April 2016
- Specialized course – First aid in field conditions, 04 January 2016–08 January 2016, 11 January 2016–15 January 2016, 15 February 2016–19 February 2016, 21 March 2016–24 March 2016, 03 October 2016–07 October 2016, 31 October 2016–04 November 2016, 07 November 2016–11 November 2016
- Specialized course – Retention – Battlefield Advanced Trauma Life Support (R- BATLS), 25 January 2016–27 January 2016, 04 April 2016–06 April 2016, 19 September 2016–21 September 2016
- Special course – Health training for Military High School Moravska Trebova, 02 May 2016–05 May 2016, 09 May 2016–12 May 2016, 16 May 2016–19 May 2016, 06 June 2016–09 June 2016
- Specialized course – First aid in the field for Police of the Czech Republic, 14 March 2016–18 March 2016
- Special course – Repetitory of extended first aid in field conditions (R-CLS Course) for Police of the Czech Republic, 17 October 2016–21 October 2016

### **Military Toxicology**

- Specialized course – Dealing with extremely dangerous poisons, drugs and psychotropic substances, 07 March 2016–10 March 2016, 03 October 2016–06 October 2016

### **Molecular Pathology**

- Specialized course – Detection and identification of biological agents, 18 July 2016–22 July 2016

### **Multidisciplinary Studies**

- Preparatory course for entrance examination, 13 June 2016–18 June 2016

### **Military Pharmacy**

- Special course – Basis of pharmacology and self-treatment, 15 February 2016–18 February 2016

## **INTERNATIONAL COOPERATION**

### **Cooperation at the military medical facility level**

#### **Brazil**

- Faculdade de Farmácia, Salvador
- Universidade Federal de Santa Catarina, Florianopolis

#### **France**

- Armed Forces Biomedical Research Institute, Brétigny-sur-Orge

#### **Germany**

- Institute of Microbiology of Federal Armed Forces Medical Academy, Munich
- Institute of Pharmacology and Toxicology of Federal Armed Forces Medical Academy, Munich

#### **India**

- Pandit Ravishankar Shukla University, Raipur

#### **Italy**

- University of Bologna, Bologna

#### **Norway**

- Norwegian Defence Research Establishment – FFI, Kjeller

#### **Poland**

- Military Institute of Hygiene and Epidemiology – WIHE, Dr Zdanowski – Department of Pharmacology and Toxicology, Warsaw

#### **Serbia**

- National Poison Control Centre of Military Medical Academy, Belgrade

#### **Slovakia**

- Air Forces Hospital, Kosice
- Central Military Hospital, Ruzomberok

- Military Institute of Hygiene and Epidemiology, Bratislava

**Sweden**

- Swedish Defence Research Agency, Dr. Artursson – Department of Threat Assessment, Division of NBC Defence, Umea

**The Netherlands**

- Division of Toxicology, TNO Prins Maurits Laboratory, Rijswijk

**Turkey**

- Gulhane Military Medical Academy, Ankara

**United Kingdom**

- Defence Medical Services Training Centre Keogh Barracks in Aldershot, Ash Vale
- DRDC, Suffield

**Scientific cooperation with civilian institutions abroad (on the basis of individual agreements and joint projects)**

**Austria**

- Baxter, Vienna
- Institute of Chemical Technologies and Analytics, Vienna University of Technology, Vienna

**Belgium**

- GlaxoSmithKline Biologicals, Rixensart

**Croatia**

- Department of Microbiology and Parasitology, University of Rijeka, Rijeka
- Institute for Medical Research and Occupational Health, Zagreb

**France**

- Aventis Pasteur MSD, Lyon
- Saint Louis Hospital, Paris

**Germany**

## ***INTERNATIONAL COOPERATION***

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- Department of Solid States Nuclear Physics, University of Leipzig, Leipzig
- German Cancer Research Center, Heidelberg

### **Hungary**

- Semmelweis University, Budapest

### **Mongolia**

- National Research Center for Infectious Diseases, Ministry of Health, Ulaanbaatar

### **Norway**

- Department of Nutrition, Medical Faculty, University of Oslo, Oslo

### **Republic of Korea**

- Korea Research Institute of Chemical Technology, Daejeon

### **Russian Federation**

- M. V. Lomonosov Moscow State University, Moskva

### **Slovakia**

- Chemical Institute, Slovak Academy of Sciences, Bratislava
- Institute of Experimental Oncology, Bratislava
- P. J. Safarik University, Kosice
- Faculty of Medicine, Comenius University in Bratislava

### **Sweden**

- Sahlgrenska Academy, University of Goteborg, Goteborg
- University of Umea, Umea

### **Switzerland**

- Institute of Molecular Systems Biology, Zurich

### **United Arab Emirates**

- United Arab Emirates University, Prof. Lorke – Faculty of Medicine and Health Sciences – Department of Anatomy, Al-Ain

### **United Kingdom**

- Health Protection Agency, Porton Down
- University of St. Andrews, St. Andrews, Scotland



**United States**

- Emory University, Atlanta
- Gilead, Foster City
- Merck & Co., Inc, Whitehouse Station
- MMRHVLB/CCID/CDC, Atlanta
- Walter Reed Army Institute of Research, Silver Spring

**Participation in international projects and networks**

<b>Ireland</b>	European Defence Agency, Galway
<b>Sweden</b>	European Programme for Intervention Epidemiology Training, European Centre for Disease Prevention and Control, Stockholm
<b>Switzerland</b>	European Study Group on Nosocomial Infection,
<b>United States</b>	U. S. Army Medical Research Institute of Infectious Disease, Fort Detrick

**Other international activities**

- P. Boštík – national coordinator for CBRN in Cap Tech ESM04 EDA
- P. Boštík – member of NATO LTSS HFM 273
- P. Boštík – member of the European Society of Clinical Virology
- P. Boštík – member of Regional Cooperation for Health Science and Technology
- P. Boštík – member of the Association of UICC Fellows
- P. Boštík – member of the American Association of Immunologists (AAI)
- P. Boštík – member of the Federation of American Societies for Experimental Biology
- P. Boštík – member of the American Society of Microbiology
- P. Boštík – member of Editorial board of „*the Open Infectious Diseases Journal*“
- V. Boštíková – member of the International Board for the Investigation and Control of Influenza and Other Epidemic Diseases
- V. Boštíková – member of the European Society of Clinical Virology
- V. Boštíková – member of Editorial board of „*Journal of Clinical Virology*“

## **INTERNATIONAL COOPERATION**

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- J. Horáček – member of the European Society for Blood and Marrow Transplantation (EBMT)
- J. Horáček – member of the European Society of Hematology
- Z. Hrstka - Military Psychologists Association of European Federation of Psychologists' Associations (EFPA)
- R. Chlíbek – European Centre for Disease Control (ECDC) – member of Potential shortages of Vaccines and treatment for rare communicable diseases in Europe Group
- R. Chlíbek – European Centre for Disease Control (ECDC) – member of Expert Panel Hepatitis A
- R. Chlíbek – member of the Global Pertussis Initiative(GPI)
- R. Chlíbek. – member of NATO – Biological Medical Advisory Committee
- R. Chlíbek – member of NATO HFMP (Human Factor Medicine Panel)
- R. Chlíbek – supervisor of the Central European Vaccination Awareness Group (CEVAG)
- R. Chlíbek – member of the Central and Eastern Europe Pertussis Awareness Group
- R. Chlíbek. – member of C.O.P.E. – Consensus on Pertussis Booster Vaccination in Europe
- R. Chlíbek – member of the European Society of Clinical Microbiology and Infectious Diseases
- M. Jakl – member of the European Society of Cardiology
- L. Jebavý – member of the European Group for Blood and Marrow Transplantation (EBMT)
- L. Jebavý – member of the Multinational Association of Supportive Care in Cancer (MASCC)
- L. Jebavý – member of the European Study Group on Nosocomial Infections (ESGNI)
- J. Kassa – member of NATO CBRN Medical Working Group
- J. Kassa – member of the European Society for Neurochemistry
- J. Kassa – member of Editorial board of „*Journal of Medical Chemical, Biological and Radiological Defence*“
- J. Kassa – member of Editorial board of „*Challenge Medical CBRN Defense International*“
- L. Klein – member of NATO HFMP
- K. Klein – member of the Academic Council on the United Nations System (ACUNS)
- K. Klein – member of the International Association for Humanitarian Medicine Brock Chisholm (IAHM)
- K. Klein – member of the United States Army Medical Department Regiment

- K. Klein – member of the World Association of Disaster and Emergency Medicine (WADEM)
- K. Klein – member of the International Society for Burn Injuries (ISBI)
- K. Klein – member of the Mediterranean Council for Burns and Fire Disasters
- K. Klein – member of the European Burns Association (EBA)
- L. Klein – member of Editorial board of *„Annals of Burns and Fire Disasters“*
- Z. Kročová – member of NATO Bio EDEP Project 3
- K. Kubelková – member of the European Radiation Research Society
- K. Kuča – consultant of Research Network Management Working Group; Cedar-Sinai RECOOP HST Consortium
- K. Kuča – member of the International Society for Neurochemistry
- K. Kuča – member of the Society of Toxicology
- K. Kuča – member of the New York Academy of Sciences
- K. Kuča – consultant of Guidepoint Global Advisors
- K. Kuča – member of Editorial board of *„Jacobs Journal of Medicine Chemistry“*
- K. Kuča – member of Editorial board of *„Jacobs Journal of Drug Metabolism and Toxicology“*
- K. Kuča – member of Editorial board of *„Proteomics & Bioinformatics“*
- K. Kuča – member of Editorial board of *„Surgical Sciences“*
- K. Kuča – member of Editorial board of *„Research in Pharmaceutical Biotechnology“*
- K. Kuča – member of Editorial board of *„ISRN Pharmaceuticals“*
- K. Kuča – member of Editorial board of *„World Journal of Methodology“*
- K. Kuča – member of Editorial board of *„World Journal of Translational Medicine“*
- K. Kuča – member of Editorial board of *„the Open Enzyme Inhibition Journal“*
- K. Kuča – member of Editorial board of *„World Journal of Pharmacology“*
- K. Kuča – member of Editorial board of *„iBusiness“*
- K. Kuča – member of Editorial board of *„Advances in Economics“*
- K. Kuča – member of Editorial board of *„Advances in Materials Science and Applications“*
- K. Kuča – member of Editorial board of *„Biochemistry & Physiology“*
- K. Kuča – member of Editorial board of *„Journal of Biosafety“*
- K. Kuča – member of Editorial board of *„Journal of Biowar & Defence“*

## INTERNATIONAL COOPERATION

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- K. Kuča – member of Editorial board of *„Journal of Business Administration and Education“*
- K. Kuča – member of Editorial board of *„Journal of Environment and Human“*
- K. Kuča – member of Editorial board of *„Journal of Molecular Biomarkers & Diagnosis“*
- K. Kuča – member of Editorial board of *„Journal of Biomedical Engineering“*
- K. Kuča – member of Editorial board of *„Journals of Toxins“*
- K. Kuča – member of Editorial board of *„Letters in Organic Chemistry“*
- K. Kuča – member of Editorial board of *„Medicinal Chemistry“*
- K. Kuča – member of Editorial board of *„Open Journal of Environmental Biology“*
- J. Lenčo – member of the Human Proteome Organization (HUPO)
- A. Myslivcová – member of the Human Proteome Organization (HUPO)
- V. Pavlík – member of NATO RTO HFM-154
- J. Pejchal – member of NATO CBRN Medical Working Group
- J. Pejchal – member of NATO RTO HFM - 222
- M. Pohanka – member of Editorial board of *„Journal of Biosafety“*
- M. Pohanka – member of Editorial board of *„Journal of Biosensors and Bioelectronics“*
- M. Pohanka – member of Editorial board of *„Journal of Bioterrorism and Biodefense“*
- M. Pohanka – member of Editorial board of *„Journal of Obesity & Weight loss Therapy“*
- M. Pohanka – member of Editorial board of *„BioMed Research International“*
- M. Pohanka – member of Editorial board of *„International Journal of Drug Discovery“*
- M. Pohanka – member of Editorial board of International *„Journal of Health, Safety and Environments“*
- M. Pohanka – member of Editorial board of *„Journal of Clinical Trials“*
- M. Pohanka – member of Editorial board of *„Microbial and Biochemical Technology“*
- M. Pohanka – member of Editorial board of *„Journal of Pharmaceutics and Drug Development“*
- M. Pohanka – member of Editorial board of *„MOJ Proteomics and Bioinformatics“*
- M. Pohanka – member of Editorial board of *„Journal of Mellomics and Nanotechnologies“*
- M. Pohanka – member of Editorial board of *„American Journal of Bioterrorism, Biosecurity and Biodefense“*

- M. Pohanka – member of Editorial board of „*International Journal of Bioweapons, Biocrimes and Bioterrorism*“
- M. Pohanka – member of Editorial board of „*Machines Review*“
- M. Pohanka – member of Editorial board of „*JSM Enzymology and Protein Science*“
- M. Pohanka – member of Editorial board of „*Austin Journal of Bioorganic and Organic Chemistry*“
- M. Pohanka – member of Editorial board of „*Journal of Immune Research*“
- M. Pohanka – member of Editorial board of „*Symbiosis Journal of Veterinary Sciences*“
- M. Pohanka – member of Editorial board of „*Austin Biomarkers and Diagnosis*“
- M. Pohanka – member of Editorial board of „*Global Journal of Allergy*“
- M. Pohanka – member of Editorial board of „*Austin Journal of Biosensors and Bioelectronics*“
- M. Pohanka – member of Editorial board of „*Jacobs Journal of Enzymology and Enzyme Engineering*“
- M. Pohanka – member of Editorial board of „*Journal of Clinical Microbiology and Case Reports*“
- J. Smetana – member of the International Society for Infectious Diseases
- O. Soukup – member of the Society for Neuroscience
- H. Střítecká – member of Editorial board of „*Journal of Obesity & Weight loss Therapy*“
- H. Střítecká – member of Editorial board „*Journal of Food Security*“
- J. Stulík – member of Editorial board of „*Frontiers in Cellular and Infection Microbiology*“
- M. Špliňo – member of the International Board for the Investigation and Control of Influenza and Other Epidemic Diseases
- Z. Šinkorová – member of NATO CBRN Medical Working Group
- Z. Šinkorová – member of the European Radiation Research Society
- M. Špliňo – member of the European Study Group on Nosocomial Infection
- M. Špliňo – member of the International Board for the Investigation and Control of Influenza and Other Epidemic Diseases
- M. Špliňo – member of the International Biographical Centre - Advisory Council
- M. Špliňo – member of the American Biographical Institute
- M. Špliňo – member of the International Society for Tropical and Travel Medicine
- M. Špliňo – member of the International Society for Infectious Diseases

## ***INTERNATIONAL COOPERATION***

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- L. Zárybnická – member of the European Radiation Research Society

## SCIENTIFIC AND RESEARCH ACTIVITIES

### Completed associate professorships

#### Dissertation defences

##### **Pohanka Miroslav**

- Department of Molecular Pathology and Biology, Faculty of Military Health Sciences, University of Defence, Hradec Králové

*area of specialization:* Analytical Chemistry

*professor's lecture:* Cholinesterases in Analytical Chemistry

### Completed associate professorships

##### **Žďárová Karasová Jana**

- Department of Toxicology and Military Pharmacy, Faculty of Military Health Sciences, University of Defence, Hradec Králové

*area of specialization:* Toxicology

*habilitation thesis:* Treatment strategy of organophosphorus inhibitors, central nervous system and acetylcholinesterase reactivators

*habilitation lecture:* Theoretical possibilities to improve drug CNS targeting

##### **Krbková Lenka**

- Faculty of Medicine, Masaryk University Brno, Clinic of Pediatric Infectious Diseases, University Hospital Brno-Bohunice

*area of specialization:* Hygiene, Preventive Medicine and Epidemiology

*habilitation thesis:* Specific intrathecal antibody synthesis to Borrelias in neuroborreliosis

*habilitation lecture:* Zika virus

## **SCIENTIFIC AND RESEARCH ACTIVITIES**

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### **Hytych Vladislav**

- Department of Thoracic Surgery, Thomayer Hospital, Prague

*area of specialization:* Military Surgery

*habilitation thesis:* VATS lobectomy... step by step

*habilitation lecture:* History and presence of surgical therapy of lung tuberculosis

### **Pastucha Dalibor**

- Department of Rehabilitation, Faculty of Medicine of the University of Ostrava, Ostrava

*area of specialization:* Hygiene, Preventive Medicine and Epidemiology

*habilitation thesis:* Opportunities for early prevention of obesity and its complications

*habilitation lecture:* Testing of genetic predispositions to sport performance

## **Dissertation defences**

### **Šenitková Iva**

- Department of Molecular Pathology and Biology, Faculty of Military Health Sciences, University of Defence, Hradec Králové

*study programmes:* Infection Biology

*dissertation:* The structural and functional analysis of virulence factors of a microb *Francisella tularensis*

### **Ručka David**

- Department of Internal Medicine, Central Military Hospital - Military University Hospital, Prague

*study programmes:* Military Internal Medicine

*dissertation:* Comparison of cerebrovascular reactivity impairment with arterial wall stiffness and coronary artery disease



**Benek Ondřej**

- Department of Toxicology and Military Pharmacy, Faculty of Military Health Sciences, University of Defence, Hradec Králové

*study programmes:* Toxicology

*dissertation:* Preparation and evaluation of potential drugs inhibiting mitochondrial enzymes

**Kupsa Tomáš**

- Department of Military Internal Medicine and Military Hygiene, Faculty of Military Health Sciences, University of Defence, Hradec Králové

*study programmes:* Military Internal Medicine

*dissertation:* Analysis of defined prognostic factors in acute myeloid leukemia - the influence of cytokines and adhesion molecules

**Dlabková Alžběta**

- Department of Toxicology and Military Pharmacy, Faculty of Military Health Sciences, University of Defence, Hradec Králové

*study programmes:* Toxicology

*dissertation:* Biochemical aspects of neurodegenerative diseases

**Sedloň Pavel**

- Department of Internal Medicine, Central Military Hospital - Military University Hospital, Prague

*study programmes:* Military Internal Medicine

*dissertation:* Comparison of the accuracy and correctness of mortality estimates for ICU patients in the internal clinics of the Czech Republic using APACHE II, APACHE IV, SAPS 3 and MPMoIII models

## ***SCIENTIFIC AND RESEARCH ACTIVITIES***

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### **Zemek Filip**

- Department of Toxicology and Military Pharmacy, Faculty of Military Health Sciences, University of Defence, Hradec Králové

*study programmes:* Toxicology

*dissertation:* Evaluation of pharmacokinetic parameters after administration of acetylcholinesterase modulators using HPLC

# **THE REVIEW OF RESEARCH PROJECTS CARRIED OUT AT THE FACULTY OF MILITARY HEALTH SCIENCES IN 2016**

## **THE INTERNAL GRANT AGENCY OF THE CZECH REPUBLIC HEALTH SERVICE**

### ***Co-investigators***

#### **Pavel Boštík**

(NV15-31847A) Development of novel disinfectants against pathogens occurring in the hospital environment

#### **Jiří Páral**

(NV15-29241A) Nanofibrous biodegradable small-diameter vascular bypass graft

#### **Jan Marek**

(NV15-31847A) Development of novel disinfectants against pathogens occurring in the hospital environment

#### **Vanda Boščíková**

(NV15-31847A) Development of novel disinfectants against pathogens occurring in the hospital environment

## **THE CZECH REPUBLIC MINISTRY OF INTERNAL AFFAIRS**

### ***Principal investigator***

#### **Zuzana Kročová**

(VF20142015039) Database of typing of biological agents - EBLN (European biodefence laboratory network)

***Co-investigators***

**Alena Myslivcová**

(VF20142015039) Database of typing of biological agents - EBLN (European biodefence laboratory network)

**Klára Kubelková**

(VF20142015039) Database of typing of biological agents - EBLN (European biodefence laboratory network)

**THE EUROPEAN DEFENCE AGENCY**

***Principal investigator***

**Jiří Stulík**

(A-1152-RT-GP) Decontamination by carbohydrate lectin affinity wipes

***Co-investigators***

**Klára Kubelková**

(A-1152-RT-GP) Decontamination by carbohydrate lectin affinity wipes

**Aleš Macela**

(A-1152-RT-GP) Decontamination by carbohydrate lectin affinity wipes

**Alena Myslivcová**

(A-1152-RT-GP) Decontamination by carbohydrate lectin affinity wipes

**Zuzana Kročová**

(A-1152-RT-GP) Decontamination by carbohydrate lectin affinity wipes

**Monika Schmidt**

(A-1152-RT-GP) Decontamination by carbohydrate lectin affinity  
wipes

**THE CZECH REPUBLIC GRANT AGENCY**

***Principal investigators***

**Pavel Boštík**

(GAP304/10/1161) The role of virus associated cellular proteins in  
T-lymphocyte dysfunction

**Jiří Stulík**

(GA15-02584S) The study of interaction of dendritic cells with intracellular  
pathogen *Francisella tularensis*

***Co-investigators***

**Pavel Řehulka**

(GAP304/10/1161) The role of virus associated cellular proteins in  
T-lymphocyte dysfunction

**Jaroslav Pejchal**

(GAP304/10/1161) The role of virus associated cellular proteins in  
T-lymphocyte dysfunction

**Vanda Bošťíková**

(GAP304/10/1161) The role of virus associated cellular proteins in  
T-lymphocyte dysfunction

**Zuzana Kročová**

(GAP304/10/1161) The role of virus associated cellular proteins in  
T-lymphocyte dysfunction

**Ivo Fabrik**

(GA15-02584S) The study of interaction of dendritic cells with intracellular pathogen *Francisella tularensis*

**Pavel Řehulka**

(GA15-02584S) The study of interaction of dendritic cells with intracellular pathogen *Francisella tularensis*

**Zuzana Kročová**

(GA15-02584S) The study of interaction of dendritic cells with intracellular pathogen *Francisella tularensis*

**Valeria Sheshko**

(GA15-02584S) The study of interaction of dendritic cells with intracellular pathogen *Francisella tularensis*

**Daniel Jun**

(GA15-16701S) Concept of non-quaternary reactivators AChE as the antidotes of organophosphorus poisoning - a new hope or a blind way?

**Pavel Boštík**

(GA14-10233S) *Humulus Lupulus* L. - source of substances with antimicrobial effect

**RESEARCH AIMS**

**Jiří Kassa**

A long-term organization development plan 1011 – Health problems of the weapons of mass destruction

**Jiří Páral**

A long-term organization development plan 1011 – Clinical fields

## ARTICLES IN JOURNALS WITH IMPACT FACTOR

1. AHUJA, RB., GIBRAN, N., GREENHALGH, D., JENG, J., MACKIE, D., MOGHAZY, A., MOIEMEN, N., PALMIERI, T., PECK, M., SERGHIOU, M., WATSON, S., WILSON, Y., ALTAMIRANO, A., ATIEH, B., BOLGIANI, A., CAROUGH, G., EDGAR, D., GUERRERO, L., HANUMADASS, M., HASIBUAN, L., HOFLAND, H., ICAZA, I., KLEIN, L., MATSUMURA, H., NNABUKO, R., PIRAT, A., PURI, V., RIASA, N., WOOD, F., WU, J., ZHAO-FAN, X., VAN ZUIJLEN, P. ISBI practice guidelines for burn care. *Burns*. 2016, **42**(5), 953–1021. ISSN 0305-4179. IF **1.904**
2. ANDRŠ, M., KORÁBEČNÝ, J., NEPOVIMOVÁ, E., JUN, D., HODNY, Z., KUČA, K. Small molecules targeting ataxia telangiectasia and rad3-related (ATR) kinase: an emerging way to enhance existing cancer therapy. *Current Cancer Drug Targets*. 2016, **16**(3), 200–208. ISSN 1568-0096. IF **3.707**
3. ANDRŠ, M., MUTHNÁ, D., ŘEZÁČOVÁ, M., SEIFRTOVÁ, M., SIMAN, P., KORÁBEČNÝ, J., BENEK, O., DOLEŽAL, R., SOUKUP, O., JUN, D., KUČA, K. Novel caffeine derivatives with antiproliferative activity. *RSC Advances*. 2016, **6**(39), 32534–32539. ISSN 2046-2069. IF **3.289**
4. BALLEK, O., VALEČKA, J., DOBEŠOVÁ, M., BROUČKOVÁ, A., MANNING, J., ŘEHULKA, P., STULÍK, J., FILIPP, D. TCR triggering induces the formation of Lck-Rack1-actinin-1 multiprotein network affecting Lck redistribution. *Frontiers in Immunology*. 2016, **7**, Art. No. 449. ISSN 1664-3224. IF **5.695**
5. BEINHAUER, J., LENOBEL, R., LOGINOV, D., CHAMRÁD, I., ŘEHULKA, P., SEDLÁŘOVÁ, M., MARCHETTI-DESCHMANN, M., ALLMAIER, G., ŠEBELA, M. Identification of *Bremia lactucae* and *Oidium neolycopersici* proteins extracted for intact spore MALDI mass spectrometric biotyping. *Electrophoresis*. 2016, **37**(22), 2940–2952. ISSN 0173-0835. IF **2.482**
6. BENEK, O., SOUKUP, O., PASDIOROVÁ, M., HROCH, L., ŠEPSOVÁ, V., JOŠT, P., HRABINOVÁ, M., JUN, D., KUČA, K., ZALA, D., RAMSAY, R., MARCO-CONTELLES, J., MUSÍLEK, K. Design, synthesis and in vitro evaluation of indolotacrine analogues as multitarget-directed ligands for the treatment of Alzheimer's disease. *ChemMedChem*. 2016, **11**(12), 1264–1269. ISSN 1860-7179. IF **2.980**
7. BENCHEKROUN, M., ROMERO, A., EGEA, J., LEON, R., MICHALSKA, P., BUENDIA, I., JIMENO, M., JUN, D., JANOČKOVÁ, J., ŠEPSOVÁ, V., SOUKUP, O., BAUTISTA-AGUILERA, O.,

- REFOUVELET, B., OUARI, O., MARCO-CONTELLAS, J., ISMAILI, L. The antioxidant additive approach for Alzheimer's disease therapy: new ferulic (lipoic) acid plus melatonin modified tacrines as cholinesterases inhibitors, direct antioxidants, and nuclear factor (erythroid-derived 2)-like 2 activators. *Journal of Medicinal Chemistry*. 2016, **59**(21), 9967–9973. ISSN 0022-2623. IF **5.589**
8. BOŠTÍKOVÁ, V., PRÁŠIL, P., PLÍŠEK, S., KRAČMAROVÁ, R., KOSINA, P., SALAVEC, M., SLEHA, R., CHLÍBEK, R., BOŠTÍK, P. Breakthrough varicella zoster virus infection in an immunized child with cystic fibrosis. *Pediatric Infectious Disease Journal*. 2016, **35**(5), 595–596. ISSN 0891-3668. IF **2.587**
9. BOŠTÍKOVÁ, V., SLEHA, R., BOŠTÍK, P. Genotyping of Varicella zoster virus clinical isolates from the Czech Republic. *Central European Journal of Public Health*. 2016, **24**(4), 331–332. ISSN 1210-7778. IF **0.525**
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