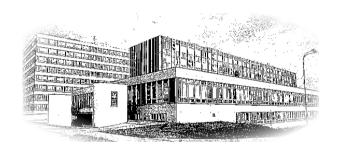
# UNIVERSITY OF DEFENCE FACULTY OF MILITARY HEALTH SCIENCES

# ANNUAL REPORT 2009

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 Science of the University of Defence in Hradec Králové.

The 18<sup>th</sup> Annual Report includes the principal research and educational activities of the 9 departments, 1 institute and 1 centre 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://www.pmfhk.cz.

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

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### **FOREWORD**

The Faculty of Military Health Sciences in Hradec Kralove is a centre of medical education and research of the Army of the Czech Republic with long-time history. 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 with a honorary nickname of "Jan Evangelista Purkyne". After the change of name to the Military Medical Research and Training Institute it is returned to its original name in 1988 and in 2004 during the professionalization of the army, reorganization of military education and University of Defense establishment it began a new phase, phase of the Faculty of Military Health Sciences. From 2004 our faculty is one of three faculties at University of Defence. Now the Faculty of Military Health Sciences belongs among key elements of military university education. After merging with two other originally separate military universities we have created a viable and developing organism stressing strengths of its units. Each school covers variety of different tasks with limited staff and resources. Our role is not only to educate and train all the medical, pharmaceutical and nursing specialists and keep scientific excellence, but also general support of the Military Health Service which is influenced by various staff cuts and restructuring as well. The faculty primarily provides studies in two accredited bachelor's study (Military Health Care Management, Health Rescuer), three master's study programme (Military General Medicine, Military Dentistry, Military Pharmacy) and eight doctoral study programmes.

In spite of limited personal and financial resources, we would like to continue and even to increase most of our activities. The Czech (Medical Service) field hospitals are well-known around the world and there are not so many other good examples from 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. It means that our students may gain deeper knowledge and skills and also an attitude to military life. From a short-term perspective, this model is more expensive; from a long-term perspective it may be more beneficial for the Army than contracting people from the civilian sector. Education, training and research should be jointed 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 are still dealing with specialization of the Czech Armed Forces in Nuclear, Biological and Chemical protection and 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 fulfillment of training needs for medical corps, specialized forces and for some NATO countries. Our very challenging goal is to build step-by-step the NATO centre of excellence for training and research in the field of NBC protection. Nevertheless our primary concern is education and training of students and young physicians. This is hardly to imagine without our closest partners and international cooperators 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 specialities in close cooperation with Charles University in Hradec Kralove. The Faculty has educated a lot of specialists not only at a republic, but also (at least) at European level. A lot of important positions prove it. These positions have been performed by the former and present faculty personnel in important international institutions from the NATO Surgeon General in Europe, through membership in various NATO, EU, United Nations Security Council, and World Health Organization boards. European Centre for Disease Prevention and Control, to the presidency in the World Medical Association that includes all doctors all over the world. 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.

The very fact that the Faculty has survived all the reform, 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 work. Not at all the universities are seen as closely collegial relationship as we have with Medical and Pharmaceutical Faculties of Charles University, University of Hradec Králové, Faculty of Health Studies in Pardubice and Faculty Hospital in Hradec Králové. Personally, I perceive as a higher cooperation with representatives of the city of Hradec Kralove, thanks to which the Faculty has an excellent name among the city public. All this adds a spiritual dimension to the Bishop of Hradec Králové favor of our Faculty. I am pleased that this collaboration will be able to continue.

Dean of the Faculty of Military Health Sciences COL Assoc. Prof. Roman Chlíbek, M.D., Ph.D.

### 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

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 peacekeeping 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, M.D., CSc. He remained in this position until September 2002 when he completed his period of service. Since December 2002 he has been Surgeon General of the Czech Army Medical Service. He is known to the public for his work at the Department of Field Surgery at the Purkyně Military Medical Academy and at the Surgical Department of the Teaching Hospital in Hradec Králové.

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

The Academy continues 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. In the future its aim is to remain a modern university institution fully comparable with similar facilities and standards in other NATO countries.

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. Our 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, merital changes were done in this area. On the basis of amalgamation of the Military School of Ground Forces in Vyškov, the Military Academy in Brno and the Purkyně Military Medical Academy in Hradec Králové there was established the University of Defence in Brno. 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 Vojkovský, CSc. became the Rector of the University of Defence. The University of Defence was oficially opened with a solemn inauguration on 8 October 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 on research work in the area of military health service have been saved. However, number of school employees was cut down.

A new official name of our school is: University of Defence, Faculty of Military Health Sciences in Hradec Králové. A new dean of our school became the former rector of school COL Assoc. Prof. Roman Prymula, M.D., CSc., Ph.D., on the basis of new academic bodies' voting.

In the year 2004, Czech Republic Army officers carried out their assignments of different forms in peacekeeping missions in Iraq, Afghanistan

and the Balkans. Members of our school were not missing. 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 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, M.D., CSc. as the Head of the Academic Senate of the University of Defence on 6 October 2005. He works as the Head of the Department of Toxicology and he is a chief specialist of the Czech Republic Army Surgeon General for toxicology.

The year 2006 was a jubilee 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. Let's recall the most important: The Faculty of Military Health Sciences University of Defence participated in the preparation of Czech field hospital contingents (so far three of them have been sent out), which ensure 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, M.D., Ph.D. worked as head doctor of the hospital, MAJ Ivo Žvák, M.D. as head doctor of operating theatres, and MAJ. Jan Psutka, M.D. 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. This year's novelty was a competition for the best scientific student's work in doctoral study programmes. The cooperation with foreign school and scientific partner institutions went on. In this context, the November visit from the Military Medical Academy Lyon, led by its new commander General Maurice Vergos, was a remarkable event.

At the end of the year, an important event in school organization happened: 10th December, COL Prof. Roman Prymula, M.D., Ph.D., was inaugurated Dean of the Faculty of Military Health Sciences. His clear election to the leading function is not only appreciation of his personal, managerial and professional qualities (it belongs to his triumph in March – obtaining the professorial diploma), but also of the stability and continuity of the place and role of the Faculty of Military Health Sciences.

Significant features of the activity of the Faculty of Military Health Sciences, University of Defence, were in the year 2008 the public acknowledgements which were attributed to the Faculty eminent research specialists. Already in February, Assoc. Prof. Jiří Bajgar, M.D., D.Sc. 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 lecture activities, besides un-disregardable appraisement Assoc. Prof. Bajgar gained from the American Society of Toxicology, being awarded the prestige Astra Zeneca Award. The prize winner significantly contributed to clarification of the toxic effect mechanism of organophosphorous compounds and to the development of new prophylactic and therapeutic means against highly toxic nerve paralytic substances.

In May, the above mentioned feature of the activity of the Faculty of Military Health Sciences, University of Defence converted into a handover of two letters of appointment of new Czech Universities professors to two eminent workers of the Faculty. In renowned Prague Carolinum, the letters were accepted from the hands of the President of the Republic by LTC Assoc. Prof. Jan Österreicher, M.D., Ph.D. and Assoc. Prof. Jiří Stulík, M.D., Ph.D.

The Faculty workers confirmed repeatedly their both research and organizing 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, M.D., D.Sc. (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 whole Republic Conference 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, M.D., 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, M.D., Ph.D 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 students' research work in 2009.

Prof. Aleš Macela, D.Sc. 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, M.D., PhD. became on the basis of selection procedure a director of the University Hospital in Hradec Králové. The Academic Senate elected LTC Assoc. Prof. Roman Chlíbek, M.D., Ph.D. a new Dean of the Faculty. The Rector of the University of Defence appointed him as dean on 15th October 2009.

### THE MAIN AIMS OF THE FACULTY IN 2009

The Faculty of Military Health Sciences (FMHS) of the University of Defence in Hradec Králové is a centre of medical education, training and research of the Army of the Czech Republic. It entirely covers 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), administration and management study, medical rescue (3 years)
- to provide postgraduate study for Ph.D. degree (4 years) in accredited disciplines:

Epidemiology Military Hygiene
Field Internal Medicine Military Radiobiology
Field Surgery Molecular Pathology

Infectious Biology Toxicology

According to the needs of the Surgeon General of the Czech Armed Forces and the Military Medical Service Administration, the Faculty ensures 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 do a medical profession as a doctor, a stomatologist, and a pharmacist. It unifies the system of their training with requirements of EU.

The faculty organizes and provides the training for medical personnel in active service, doctors, nurses and other medical personnel. The faculty provides professional refresher courses for medical staff, non-medical staff and non-medical personnel of field medical units-hospital base and its units in selected up-to-date topics. It takes part in continued training of doctors and health care personnel, who are sent to missions abroad as well. Unique military know-how is attractive for people, who work out of the military health care sphere. The FMHS provides courses of advanced first aid in the field not only for Military Medical Service personnel but also for professional non—

medical personnel 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 the others.

All soldiers assigned to include into foreign missions take part in extra courses of advanced first aid. Training of emergency life support in field conditions is required in medical personnel. The courses BATLS / BARTS (Battlefield Advanced Trauma Life Support) and BARTS (Battlefield Advanced Resuscitation Techniques and Skills) for doctors and nurses or health care personnel are enlarged on the problems of NBC protection and they become a significant standard not only for the whole medical service, but also for a lot of other specialists, who take part in foreign missions.

Other courses concentrate on teaching and training of comprehensive knowledge necessary for providing medical care within the frame of Disaster Medicine. The FMHS also provides 71 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 higher cathegories 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. It managed to set up scientific teams which are able to use advanced laboratory technologies. It has its own complex laboratory technologies for scientific work above all within the sphere 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 start scientific cooperation with foreign partners. The FMHS is the only one in the Czech Republic who provides military research within the sphere of CBRNE issues in NATO and EU.

The high level of the present teams has enabled to start 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 enunciated priorities (biological agents, chemical agents, military health care), furthermore it reached joining the appropriate institutions and organizational structures of NATO and EU countries (including drawing financial NATO and EU funds) and it gained some priority results in enunciated 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 as well as contemporary scientific production within the sphere of observation of medical aspects of NBC agents affection is the subject "Centre of Advanced Studies" with CBRNE protection issues in the Army of the Czech Republic. It 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 are the other important fields of scientific work.

A lot of invitations and speeches at international symposia and conferences as well as a great number of publications prove that scientific knowledge is used in education. The FMHS personnel can publish achieved results in research work, therapeutic preventive activities and in educational activities in the journal "Vojenské zdravotnické listy" (Military Medical Journal), which is the oldest military specialized journal which has been being published since 1927. Together with professional scientific and pedagogical activities there are also results in lecture and publication areas. They are a part of evaluation, which is carried out annually. The faculty is successful in keeping a good level of publication activities in impact factor journals and in other national and foreign journals with review proceedings. This fact enables relatively wide training activities in accredited doctoral study programmes.

Nowadays the Faculty participates in 22 projects of defence research, 5 projects of Internal Grant Agency of the Ministry of Health, 5 project of the Ministry of Education, 6 projects of the Grant Agency of the Czech Republic, 5 foreign projects (NATO, EC). The total sum of research grants represents the amount of 62 mil. Czech Crowns. The accreditation award for the Vivarium in the field of biological and medical science is an important step to realize a lot of research and experimental work on laboratory animals.

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

Research and development is carried out at 9 departments (Epidemiology, Field Internal Medicine, Field Surgery, General and Emergency Medicine, Military Hygiene, Military Medical Service Organization, Public Health, Radiobiology, Toxicology) and in the Institute of Molecular Pathology, and the Centre of Advanced Studies.

In 2009, scientific work at the faculty departments, the institute and the centre was focused on CBRNE protection research, prevention in hygiene and epidemiology, topical problems of field surgery and field internal medicine, topical problems of organization, management, education and information science in the Military Medical Service.

The received accreditation for proceedings to promote a professorship for the branches of Hygiene, Occupational Medicine, Epidemiology, Toxicology, Field Internal Medicine and Molecular Pathology and the accreditation for habilitation (associate professor) in the branches of Hygiene, Occupational Medicine and Epidemiology, Toxicology, Field Surgery, Military Radiobiology, Field Internal Medicine and Molecular Pathology gives the evidence about the excellent level of achieved results in scientific and research activities of FMHS. In 2009 there were 10 professors (prof.), 12 associate professors (doc.), 4 doctors of science (DrSc.), 54 persons with research degrees (CSc., Ph.D.) 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 were more and more developed. Therapeutic activities were provided, especially in the field of hematologic intensive care, traumatology, hepatobiliary surgery, and at the plastic surgery departments of internal medicine and surgery, at the Teaching Hospital. In the field of general and emergency medicine there were ongoing therapeutic activities within the framework of the Garrison Medical Centre and Emergency Medical Department.

#### 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. 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. Every year there are exchanges of not only students but also of pedagogical staff with the Military Medical Academy (ESSA) in Lyons in France, contacts in pedagogical sphere are kept with partner schools in Germany (Sanitätsakademie der Bundeswehr, Munich), the Military Medical Academy in Sofia, Bulgaria. In the past there were contacts with schools in Lódź (Poland) and Beograd (Serbia). Students take part in study stays in France, Slovakia, Germany, Sweden, Switzerland, England and in the frame of Erasmus programme in other states.

#### 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 presentation of international cooperation results. At the FMHS there are conditions for foreign cooperation in medical research. 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), cooperation in research projects with other foreign scientific institutions and participation in projects of 7th EU General Programme. Our aim is to intensify international cooperation in NATO focused on scientific support of the armed forces structure.

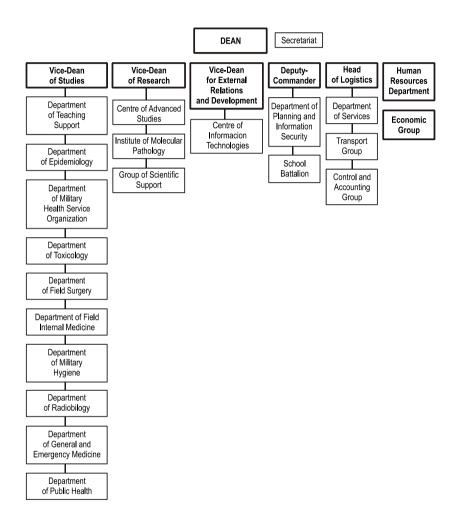
#### 6. Scientific and educational information services

Scientific and educational information services that support the whole Medical Service of the Czech Republic Army were provided by the Centre of Information 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 as in the preceding years. In 2009 five FMHS members took part in the foreign missions.

### THE STRUCTURE OF THE FMHS



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Centre of Advanced Studies is an integral part of Faculty of Military Health Sciences of University of Defence, Czech Republic. The main task of the Centre is the transfer, utilization, and dissemination of advanced technologies for biomedical defence research supported by Ministry of Defence of Czech Republic. The biological labs of BSL2 and BSL3 category and chemical lab for the analyses of highly toxic chemicals were activated

during the first year of its existence. The team of the Centre adopted and provided an access to new technologies. Among them are technologies for histochemistry, immunohistochemistry, laser microdissection, fluorescence microscopy, proteomic technologies including isolation and proteomic analysis of total membrane proteins and lipid-raft associated proteins. genomic technologies oriented to gRT-PCR applications, mutagenesis of Francisella tularensis by allelic replacement, gene reporter assays. technologies for the qualitative and quantitative analyses of antidotes and chemical warfare agents in biological samples using different HPLC techniques, methods for determination of oxidative stress, construction of biosensors, preparation of quaternary and non-quaternary inhibitors of enzyme acetyl cholinesterase, random chemistry approaches in the development of acetyl cholinesterase inhibitors, technology of artificial neural networks and molecular modeling for prediction of new bioactive compounds. and finally microbiological technologies needed for screening of functional properties of bacterial mutants (proliferation assays and protective tests).

CBRN programmes in 2009 follow the long-lasting research strategy of the Centre. B-agent programme involves several topics aimed at management of biological crises, modelling & risk assessment, (immuno)prophylaxis of infections, immunopathogenesis of viral diseases and, finally, the genetics of biological agents oriented to Francisella tularensis. C-agent programme is focused on development of new prophylactic and therapeutic antidotes and toxic agent scavengers utilizing the methodology of 3D in silico modelling and simulation of bio-molecular three- and fourdimensional structures and inter-molecular interactions. RN-agent programme encompassing the problems of molecular markers of ionizing radiation injury is divided into biodosimetry and diagnosis and therapy of ionizing irradiation syndromes.

New international contacts have been established with several European and US military and civilian research institutions. Moreover, the broad-based collaboration under the umbrella of European Defence Agency started to be the indispensable tool for reinforcement of scientific collaboration inside the European Union. Collaboration with partners is supported by two-side or multilateral projects. During short time of its existence the Centre of Advanced Studies thus achieves all attributes of fully consolidated scientific centre collaborating with substantial number of prominent European scientific institutions.

#### RESEARCH PROJECTS

### Array technologies for BSL3 and BSL4 pathogens

Macela, A., Butaye, P., Sjostedt, A., Cassone, A., Veljkovic, V., Stulík, J., Homan, W., Toman, R.

Supported by EU COST Programme, 2005–2009 (Project No.: COST Action B28)

The main objective of the Action is to increase knowledge on BSL3 and BSL4 agents in order to support the development of more accurate diagnostics, vaccines and therapeutics, and to better understand epidemiology of these highly pathogenic micro-organisms that can be potentially used as biological weapons. The concrete scientific programme is focused on the identification of target genes or gene products for the development of specific diagnostic and characterization tools. Seventeen European countries together with Canada take part in this project and individual laboratories are divided according to applied technologies into five different workgroups — Flow cytometry and micro-array, Antigenicity, Proteomics and glycomics, Genomics and Microbiology.

# BIODEFENCE – Classification of biological agents – support of an international project "Establishment and management of a common database of B-agents – A European Laboratory Biodefence Network

Hernychová, L., Hubálek, M., Macela, A., Kubelková, K.

Supported by the Czech Republic Ministry of Defence, 2009–2011 (Project No.: OVUOFVZ200901)

The goal of the project is to gather typing data for B-agents listed in project of the european biological database by the mean of mass spectrometry (MALDI-TOF, tandem mass spectrometry) and molecular biology (real-time PCR, MLST).

### Butyrylcholinesterase and aldoximes – bioscavengers for detoxification of organophosphates

Kolečkář, V., Kuča, K., Jun, D., Žďárová Karasová, J., Musilová, L., Binder, J., Bosak, A., Berend, S., Čalič, M., Vrdoljak, A., Šinko, G., Radiš, B., Kovarik, Z.

Supported by NATO Cooperative Grant, 2007–2009 (Project No.: CBP.EAP.CLG 983024)

Current antidotes for organophosphorus compounds (OP) poisoning consist of a combination of pretreatment with carbamates (pyridostigmine

bromide), to protect acetylcholinesterase (AChE) from irreversible inhibition by OP compounds, and post-exposure therapy with anti-cholinergic drugs to counteract the effects of excess acetylcholine and oximes to reactivate OPinhibited AChE. One part of our previous research (RIG-PDD(CP)-(CBP.EAP.RIG 981791)) has been focused on conventional and a series of newly synthesised pyridinium oximes and therapy in tabun and soman poisoning. Oximes with the oxime group in para-position on the pyridinium ring were better reactivators of tabun- than of soman-inhibited AChE, but oximes with the oxime group in ortho-position were effective protectors of acetylcholinesterase against tabun or soman inhibition. Moreover, we had shown that a promising treatment in tabun poisoning by oximes could be improved if oximes are also applied as pretreatment drugs. In this project we would like to move the focus of our research on butyrylcholinesterase (BChE) that is being extensively investigated by several groups and judged to be the most suitable bioscavenger. An aim of the project will be optimisation of oximes that in combination with BChE could work as a catalytic scavenger in continuous decomposition of organophosphorus compounds. This approach turns the irreversible nature of the OP: ChE interaction from disadvantage to an advantage; instead of focusing on OP as an anti-ChE, one can use ChE as an anti-OP.

### Countermeasure against chemical terrorism – development of new antidotes against nerve agents

Kuča, K., Musílek, K., Jun, D.

Supported by the Ministry of Education, Youth and Sports, 2006–2009 (Project No.: ME 865)

The project is aimed at searching the most common pesticides as potentional nerve agents, and testing to inhibite in vitro enzyme Acetylcholinesterase (AChE).

### Development of novel antidotal treatment against organophosphorus pesticides

Kuča, K., Marek, J., Pohanka, M., Žďárová Karasová, J., Musílek, K. Supported by the Ministry of Education, Youth and Sports, 2009–2012 (Project No.: ME09086)

The development of the broad-spectrum acetylcholinesterase reactivator against organophosphorus pesticides (OPP) is the main aim of the whole project. The synthesis and in vitro evaluation of novel or formerly prepared compounds will be used for this purpose. The structure-activity studies will be figured out for its determination. Such reactivator will be further tested in vivo and might become a candidate for the preclinical trials against OPP.

# FARMAKO – Determination of important pharmacokinetic and biochemical parameters and evaluation of blood-brain barrier penetration using drugs introduced to Czech Army

Žďárová Karasová, J., Kuča, K., Pohanka, M., Novotný, L.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200811)

The aim of this project is to characterize pharmacokinetics of substances using in therapy by intoxications. Mainly their distribution in body tissues, in vitro and in vivo testing of ability to penetrate into central nervous system and their possibility to injury brain. At the same time we will evaluate some important biochemical data, which can be influenced by this therapy.

### FRANCIS – Development of new prophylactic tools against Francisella tularensis infection

Stulík, J., Červený, L., Dresler, J., Härtlová, A., Hubálek, M., Lenčo, J., Link, M., Klimentová, J., Kročová, Z., Filipp, D.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200808)

Identification of new candidate molecules of protein origin suitable for the construction of better defined live or subunit vaccines and elucidation of the process of antigen presentation of tularemic peptides as a key event for the development of new strategies to treat and prevent infection with Francisella tularensis.

### HOREČKA – Method of viral hemorrhagic fevers' causative agents rapid detection and identification

Červený, L., Fajfr, M., Růžek, D.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUVZU2008002)

The main aim of our reaserch project is design and optimalisation of new rapid viral hemorrhagic fevers' (VHF) detection and identification system targeting main causative pathogens. The system will be based on two steps: primary rapid detection and identification of viral family using Real-time reverse-transcription polymerase chain reaction (RT-PCR) and secondary pointed use of the same method for causative pathogen precise species determination. Output of this project will be concept of new rapid economic VHF diagnostic technique, fitting its detection limits, difficulty and material requiremets of Czech army biological defense forces.

### INDIKÁTORY II – Reverse detection of received ionizing radiation dose by monitoring of cell population changes using biophysical methods

Šinkorová, Z., Österreicher, J., Kročová, Z., Pejchal, J., Zárybnická, L., Tóthová. I.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200809)

To establish extrapolated calibration curve for determination the received dose in individuals exposed to ionizing radiation which could be practical used in the Czech army and to design the best enlistment of this biophysical method into the therapeutic-transfer system of the Czech army.

### INHIBITOR – Novel inhibitors of acetylcholinesterase as prophylaxis of nerve agent poisonings

Musílek, K., Pohanka, M., Žďárová Karasová, J.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200805)

This project is focused on finding of suitable reversible acetylcholinesterase inhibitor as a replacement of prophylactic drug pyridostigmine. For this purpose, 100 reversible AChE inhibitors will be prepared, evaluated in vitro and compared with prophylactic drugs used in the Army of the Czech Republic. Regarding the structure-activity relationship, the best reversible AChE inhibitor will be determined and recommended for in vivo evaluation.

### MORČE – Influence of the nerve agent and reactivators of acetylcholine esterase on the Guinea pig

Pohanka, M., Novotný, L., Jun, D., Kuča, K., Žďárová Karasová, J.

Supported by the Czech Republic Ministry of Defence, 2009–2011 (Project No.: OVUOFVZ200905)

The aim of this project is determine the physiological activity of Acetyl Choline Esterase (AChE) and detection of LD50 of inhibitors paraoxon, tabun, cyklosarine and reactivators AChE pralidoxim, obidoxim, trimedoxim, HI-6, methoxim. Next task is asses protective effectively of reactivators. Also detection of AChE activity in organs after intoxication with nerve compound and following reactivation. We will also follow up plasmatic concentration of reactivatos in plasma after i.m. administration and morphological changes in the tissues.

### New biological methods of the received dose determination

Matiasovic, J., Šinkorová, Z., Faldyna, M., Zárybnická, L., Tichý, A., Vilasová. Z.

Supported by the Ministry of Education, Youth and Sports, 2008–2010 (Project No.: 2B08028)

In case of accidental irradiation of a human body (irradiation accidents, inappropriate manipulation with radioactive waste, terroristic attack) the medical personnel have to cope with the fundamental task to determine the received dose of ionizing radiation in the most accurate and rapid way. Based on such analysis an appropriate treatment of irradiation disease must begin immediately. Current biodosimetric methods are time-consuming and thus do not fulfill the main task – to begin the treatment as soon as possible, preferably within 24 hr after exposure. In the attempt to provide a faster tool for an irradiation-associated body damage estimate we propose to use multiparametric flow cytometry and microarray analysis of blood lymphocytes cultivated for a defined time interval upon irradiation, which would allow for the received dose estimate by determination of apoptosis progression or changes in protein expression in lymphocyte subsets with different radiosensitivity.

### NOTES – Surgical treatment of the digestive tube's penetrating injuries using Natural Orifice Transluminal Endoscopic Surgery

Klein, L., Dušek, T., Ferko, A., Lochman, P., Novotný, L., Páral, J., Šubrt, Z. Supported by the Czech Republic Ministry of Defence, 2009–2011 (Project No.: OVUOFVZ200903)

The project is focused on creating the non-devastating penetrating injury model of the digestive tube and testing the possibility for applification of the NOTES technology in the treatment. The method uses natural body's orifice (mouth, vagina, urethra, anus) for intraluminal instalation of the double channel operating endscope into the targeted digestive tube's organ. Through its wall it is put into the free abdominal cavity. Our hypothesis supposes using this method itself or in combination with laparoscopic technique for traumatic defect's closure in the wall without laparotomy. Project will be provided in the porcine model. Animals will be observed for the period of two weeks, and after euthanasia they will be obducted for detection of postoperative complications.

### ORCHIDS – Evaluation, optimisation, trialling and modelling procedures for mass casualty

Simpson, J., Cabal, J., Kuča, K.

Supported by the Executive Agency for Health and Consumers, 2008–2011 (Project No.: 100940)

The ORCHIDS project (Optimisation through Research of Chemical Incident Decontamination Systems) involves the evaluation of emergency decontamination methods, and the exercising and modelling of established mass casualty decontamination facilities. The project will deliver quantitative evidence on the optimum techniques for dealing with a range of potential contaminants and scenarios requiring emergency decontamination. A full range of issues will be addressed, from applied toxicological research to mass casualty decontamination exercising and modelling. This applied research will generate evidence-based guidelines on the optimum techniques for effective mass casualty decontamination, which will be disseminated by the project team through a network of EU Partners and stakeholders, which will be established and developed during the project. In addition, the project will consider the provision for minority and vulnerable groups in emergency decontamination, and will produce public information materials (leaflets and educational tools) designed to help increase knowledge, trust and confidence in emergency decontamination provision.

### OTRAVA – Novel prophylactic antidotes of nerve agent poisonings based on scavengers

Jun. D., Kuča, K., Musílek, K., Pohanka, M.

Supported by the Czech Republic Ministry of Defence, 2009–2012 (Project No.: OVUOFVZ200902)

Organophosphorus compounds are weaponized in some countries as chemical warfare agents (sarin, tabun, VX). These compounds inhibit enzymes acetylcholinesterase and butyrylcholinesterase. As antidotes of poisonings by these compounds are often used anticholinergics (atropine, benactyzine) and cholinesterase reactivators (pralidoxime, obidoxime, HI-6). Favorable solution is using of specific enzymes (mostly cholinesterases) as scavengers, able to catch toxic organophosphorus compounds in the bloodstream before they start their toxic effect in the organism. We would like to find suitable cholinesterase reactivators, with the aim to suggest and test their combination with enzymes as pseudocatalytic bioscavenger. This combination allows increase prophylactic efficacy of administered enzyme.

### PROTEIN – Biosensors for determination of nerve agents and yperites using recombinant proteins and nanotechnology

Pohanka, M., Kuča, K., Musílek, K., Žďárová Karasová, J., Kassa, J.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200807)

The proposed project is aimed at construction of enzyme based biosensors with immobilized ether cholinesterase and/or dehalogenase for detection of nerve agents and yperite using highly innovative nanotechnologies.

## RADSPEC – Short-term and long-term nonspecific changes in organisms exposed to high and low doses of nerve agents on cellular and molecular level

Pejchal, J., Vilasová, Z., Tichý, A., Mervartová, L., Zárybnická, L.

Supported by the Czech Republic Ministry of Defence, 2008–2009 (Project No.: OVUOFVZ200812)

The goal of this study is to evaluate expression of perspective biodosimetric markers, such as fosfo-elk-1, fosfo-atf-2, fosfo-CREB, fosfo-p53 (aktivated at serine 15), on the model of nervous paralytic compound (soman) intoxicated rats to investigate their radiospecificity.

### REAKTIVÁTOR – Robotized system for in vitro evaluation of novel rectivators of acetylcholinesterase inhibited by nerve agents

Cabal, J., Kuča, K., Jun, D., Musílek, K., Pohanka, M.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200801)

The aim of this project is to develop new robotic system based on sequential injection analysis (SIA) for testing of reactivation potency of newly synthesized antidotes against nerve agent poisonings.

### Relationship between structure of acetylcholinesterase reactivators and their reactivation potency

Kuča. K.

Supported by the Czech Republic Grant Agency, 2007–2009 (Project No.: GP305/07/P162)

Antidotal treatment of nerve agent and pesticide poisonings consists of anticholinergics (atropine mainly) and acetylcholinesterase (AChE) reactivators (pralidoxime, obidoxime, methoxime or HI-6). Due to the fact that currently available AChE reactivators are not able to reactivate AChE

inhibited by all potential nerve agents, the development of new AChE reactivators still continues. For this purpose, the understanding of relationship between structural factors and their influence on the reactivation potency is useful. Among them, presence and number of functional oxime groups, presence and number of quaternary nitrogens, length and shape of the connecting chain are well discussed. In this project, we would like to find out relationship between structure of currently available AChE reactivators and their reactivation potency. For this purpose we would like to test one houndred structurally different AChE reactivators for their potency to reactivate AChE inhibited by several nerve agents and pesticides (sarin, tabun, VX, cyclosarin, paraoxon, DFP). Results obtained during this work will be in future used as a help for the chemists interested in synthesis of new AChE reactivators.

# RONSDOZ – Noninvasive measurement of proinflamatory markers of oxidative stress in irradiated as an indicator of received dose of radiation. Protective role of acetyl-L-carnitine

Vávrová, J., Österreicher, J., Tichý, A., Pejchal, J., Řezáčová, M.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200806)

To evaluate whether the bioindicators of oxidative and nitrative stress and inflammations of the airways can be used as biodosimetric markers after exposure to gamma radiation, after whole-body and partial irradiation of rats. To evaluate protective effect of acetyl-L-carnitine.

### SUBSTANCE – Development of novel decontaminants and disinfectants of skin based on micellar compounds

Cabal, J., Kuča, K., Novotný, L., Kassa, J., Pohanka, M., Jun, D., Musílek, K. Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200803)

The aim of this project is a development of new compound or mixture with a good decontaminant efficacy against wide spectrum of chemical warfare or pesticides. The second aim will be also to gain the universal disinfectant, which will be effective against many kinds of microbes.

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The staff of the Centre of Information Technologies provides the top quality information service to ensure efficient scientific, research and teaching activities for teaching and research staff as well as students under new circumstances.

The Centre of Information Technologies is divided into two specialized parts – the group of informatics and the group of computer applications.

The group of informatics provides students, research and teaching staff of the Faculty of Military Health Sciences and members of the Czech Army Medical Service with wide scientific and information services. The main information services are provided by the library with 85 000 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 group also participates in teaching activities in the doctoral study programmes and scientific education (Ph.D.) by giving lectures in Basics of Informatics focused on retrievals, processing and publication of scientific information.

The group of computer applications provides the operation of the faculty network, enables access to army, specialized and public information systems

#### **CENTRE OF INFORMATION TECHNOLOGIES**

and supplies the needs of the Faculty with modern information technologies. Main activity of the group 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 this group 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://www.pmfhk.cz).

The printing-office of the Centre is able to cover reprographic and printing needs of the Faculty by its own sources only in limited extent. It works together with the printing-office of the University of Defence in Brno.

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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 two groups: the epidemiology group and the microbiology, disinfection, disinsection and rodent control group.

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. Doctoral study programmes (Ph.D. – epidemiology and medical microbiology) are certified by the Czech Governmental Commission. Since 1997, altogether 23 students have finished their Ph.D. studies.

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

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 clinical evaluation of the new vaccines like pneumoccocal vaccines, zoster vaccines, Human Papiloma Virus vaccines, rotavirus vaccines, new adjuvante vaccines against viral hepatitis B, Lyme disease vaccines, combined hepatitis B and typhoid fever vaccines, flu vaccines or new vaccination schedules.

Members of the department are members of different Czech journals editorial boards (e. g. "Epidemiologie, mikrobiologie a imunologie" – prof. Špliňo), and they work as reviewers of international journals. Some of them work in a number of committees and boards: Scientific Board of the Ministry of Health (prof. Špliňo), Czech Immunization Committee of the Ministry of Health (prof. Prymula), or European Centre for Disease Control and Prevention (prof. Prymula).

Members of the department are also members of NATO working groups and advisory committees for biological threats and weapons (BIOMEDAC – Biological Medical Advisory Committee – doc. Chlíbek, COMEDS MMT EP (Military Medical Training Expert Panel) – dr. Smetana).

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.

The researchers of the microbiology group have also solved questions concerning the prevention of endogenous and exogenous infections in immunocompromised patients. They have also joined the European Study Group on Nosocomial Infections.

#### RESEARCH PROJECTS

A phase II, observer-blind, randomised, placebo-controlled, adjuvant-dose selection, multicenter prophylactic vaccination study to evaluate the immunogenicity and safety of GSK Biologicals' herpes zoster vaccine, gE/AS01B, in comparison to gE combined with ½ dose AS01B adjuvant (gE/AS01E), to unadjuvanted gE (gE/Saline), and to Saline (placebo) when administered twice in subjects aged 50 years and older

Chlíbek, R., Smetana, J., Kalíšková, E., Vokurková, D.

Supported by the GlaxoSmithKline Biologicals co., 2009–2010 (Project No.: 112077 (Zoster-010))

Herpes zoster or shingles is caused by the reactivation of latent varicellazoster virus (VZV). The incidence of HZ increases with age, presumably due to waning cellular immunity. GSK Biologicals' candidate HZ vaccine, gE/AS01B, consisting of VZV glycoprotein E (gE) adjuvanted with AS01B has been evaluated in previous studies. The present study will provide comparative data concerning the immunogenicity and safety of 50  $\mu g$  gE adjuvanted with different doses of AS01B, i.e., full dose AS01B, ½ dose AS01B (= AS01E), and no adjuvant when administered twice (Months 0 and 2) in adults  $\geq$  50 YOA, and will include a Saline group as a negative control (placebo).

A phase II, single-blind, randomized, controlled, multicentre vaccination study to evaluate the safety and immune response of the GSK Biologicals Zoster vaccine, gE/AS01B, and to compare 3 doses of gE with AS01B adjuvant in healthy elderly subjects, aged 60 to 69 years and 70 years and above

Chlíbek, R., Smetana, J., Kalíšková, E.

Supported by the GlaxoSmithKline Biologicals co., 2007–2010 (Project No.: 108494, Zoster-003)

The safety and immunogenicity of the Varicella Zoster virus (VZV) gE (50  $\mu g)/AS01B$  vaccine has been evaluated in a previous study. This study intends to compare the immunogenicity and safety of different doses of gE (25, 50 and 100  $\mu g)$  with AS01B adjuvant and of different schedules of administration (1 vaccination with 100  $\mu g$  of gE versus 2 vaccinations with different doses of gE) in the healthy elderly (? 70 years) population. Subjects aged 60-69 years will also be enrolled to evaluate the safety and immunogenicity of the vaccine formulations in that age group. A control group vaccinated with 100  $\mu g$  gE antigen with saline will be included to support justification of the adjuvant.

A phase 2 partially observer-blind randomized controlled multi-center dose-ranging and formulation-finding study of a new Novartis Meningococcal B Recombinant Vaccine evaluating the safety and immunogenicity when given concomitantly with routine vaccines in 2-month-old infants

Prymula, R., Chlíbek, R., Hrunka, S., Novák, L., Jarolímek, J., Slavík, Z., Karlová, V., Říhová, J.

Supported by the Novartis, 2009–2010 (Project No.: 2009-010106-11)

This study is aimed at assessing the safety and immunogenicity of different doses and formulations (including decreasing OMV contents) of a new Novartis Meningococcal B Recombinant Vaccine (rMenB + OMV NZ) in order to optimize its safety profile while maintaining sufficient immunogenicity. In addition, this study will assess whether prophylactic administration of paracetamol can decrease the incidence of febrile reactions following vaccination without impacting the immunogenicity of rMenB + OMV NZ and the routine infant vaccines. (V72P16)

A phase 2b, open label, randomized, parallel-group multi-center study to evaluate the safety, tolerability and immunogenicity of Novartis Meningococcal B Recombinant Vaccine when administered with or without routine infant vaccinations to healthy infants according to different immunization schedule

Prymula, R., Chlíbek, R., Hrunka, S., Novák, L., Jarolímek, J., Slavík, Z., Karlová, V., Říhová, J.

Supported by the Novartis, 2009–2010 (Project No.: 2008-001592-30)

Novartis is developing a Meningococcal B Recombinant Vaccine (rMenB). In the initial stages of the program, the rMenB antigens were formulated with aluminum hydroxide with or without outer membrane vesicles (OMV). Both formulations have been evaluated in preclinical and clinical studies. The proposed study is aimed to assess the safety and immunogenicity of rMenB+OMV when administered with or without routine infant vaccinations to healthy infants in their first year of life according to different immunization schedules. This study is also aimed to demonstrate that the immunogenicity of routine infant vaccines when given concomitantly with rMenB+OMV at 2, 3 and 4 months of age, is non-inferior to that of routine infant vaccines given without rMenB+OMV NZ. (V72P12)

A phase 3, open label, multi-center, extension study to evaluate the safety, tolerability and immunogenicity of Novartis Meningococcal B Recombinant Vaccine when administered as a booster at 12 months of age or as a two-dose catch-up to health toddlers who participated in study V72P13

Prymula, R., Chlíbek, R., Hrunka, S., Novák, L., Jarolímek, J., Slavík, Z., Karlová, V., Říhová, J.

Supported by the Novartis, 2009–2010 (Project No.: 2008-006301-17)

Novartis is developing a Meningococcal B Recombinant Vaccine (rMenB). To date, the tolerability, safety and immunogenicity of the rMenB+OMV NZ final formulation has been investigated. This extension study, will aim to enroll subjects who completed the parent study V72P13. Subjects who received three doses of rMenB+OMV NZ will be randomized to receive a fourth (booster) dose of rMenB+OMV NZ at 12 months of age. (V72P13E1)

A phase 3, partially blinded, randomized, multi-center, controlled study to evaluate imunogenicity, safety and lot to lot consistency of Novartis Meningococcal B Recombinant Vaccine when administered with routine infant vaccinations to healthy infants

Hrunka, S., Chlíbek, R., Říhová, J., Prymula, R., Novák, L., Jarolímek, J., Slavík, Z., Karlová, V.

Supported by the Novartis, 2009–2010 (Project No.: 2007-007781-38)

Novartis is developing a Meningococcal B Recombinant Vaccine (rMenB). The proposed study is aimed to assess the immunogenicity and safety of rMenB+OMV NZ and the consistency of immune response from 3 lots of rMenB+OMV NZ and to demonstrate that the immunogenicity and safety of routine infant vaccines when given concomitantly with rMenB+OMV NZ at 2, 4 and 6 months of age, is non-inferior to that of routine infant vaccines given without rMenB+OMV NZ. (V72P13)

### LEPTOSPIROSIS - Risk evaluation and new possibilities of detection

Valenta, Z., Neubauerová, V., Kolínková, L., Ošťádal, A., Čermáková, Z., Fajfr, M., Douda, P., Smetana, J., Navrátilová, L., Krejčová, R.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUVZU2008001)

The aim of this four-year study is to evaluate territory of Czech Republic according to leptospirosis acquiring risk with special regard for military training areas and AOR of Czech armed forces in NATO and UN missions abroad., analyze collected data and create standard operational protocol for exercise and field operations' areas with significant risk of leptospirosis. Compare analytical efficacy of available diagnostic methods for leptospires detection. Precise and accelerate direct proof of leptospiral DNA from patients' and environmental samples and pick up the most suitable method with possibility of rapid and precise detection able to work in field, fully satisfying all the requirements of Czech armed forces.

# **DEPARTMENT OF FIELD INTERNAL MEDICINE**

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The Department of Field Internal Medicine focuses systematically on the specialized postgraduate level of medical studies in the branch of field internal medicine. This discipline deals with specific military problems, in particular with the problem of saving the lives of patients suffering from serious and life-threatening conditions of non-surgical character. Such injuries generally occur during mass disasters both in wartime and in peacetime.

In the Department of Field Internal Medicine the development of military internal medicine follows three basic directions or areas: therapy and prevention, pedagogical and educational methods, and scientific research:

- Work in therapy and prevention is essential for military internists, because it enables us to acquire and develop good professional aptitude and experience in care for the seriously ill.
- The pedagogical and educational aspect of our work follows from our therapeutic/preventive activities. The Department coordinates the Branch Council of Clinical Medical Fields and the Branch Council of Postgraduate Study for Doctorates in Accredited Disciplines of Field Internal Medicine (equivalent of Ph. D.).
- Scientific research is the Department's third main area of activity.
   Essentially, it extrapolates the results of applied clinical research into specific military conditions and into medical care under field conditions.

In 2009 the research in the Department continued in the five basic fields:

- Haematology growth of stem cells preparation for bone marrow transplantation.
- Biochemical and electrophysiologic investigation and monitoring of acute coronary syndromes.
- Cardiotoxicity of antitumorous therapy.
- Diagnosis and therapy of hypercoagulative states the monitoring of anticoagulant therapy.
- Global quality of life in patients who have undergone the hematopoietic stem cell transplantation

### Cooperation in the clinical research:

- Haematopoietic stem cell transplantation. A role of cytokines in transplantation. Transplant-related complications and supportive care has continued.
- A study in the application of enteral and parenteral nutrition in intensive metabolic care has continued.
- The study of supraventricular tachycardias electrophysiologic investigation and therapy including radiofrequency ablation has continued.
- Participation (co-investigators) on international study IRIS Immediate Risk-stratification Improves Survival, primary prevention of sudden cardiac death.
- Cardiotoxicity of antitumorous therapy the research project has continued.

- Projects have been carried out in the field of determination and analysis of monoclonal immunoglobulins in the urine of patients with multiple myeloma.
- New biochemical cardiac markers (cardiac troponin T, high sensitivity CRP, brain natriuretic peptide) – clinical and laboratory evaluation has continued.
- 8. Analysis of transplantation activities, indications and results in the Czech Republic National Stem Cell Transplantation Registry.
- Phase III trial of combined immunochemotherapy with Fludarabine, Cyclophosphamide and Rituximab (FC-R) versus chemotherapy with Fludarabine and Cyclophosphamide (FC) alone in patients with previously untreated chronic lymphocytic leukemia. CLL – 8 / ML 17102 Protocol of the GCLLSG (German CLL Study Group) Dept. of Internal Medicine I, University Hospital Cologne, Germany.
- 10. GvHD prophylaxis with ATG-Fresenius S in allogeneic Stem Cell Transplantation from matched unrelated donors: A randomised phase III multicenter trial comparing a standard GvHD prophylaxis with cyclosporine A and methotrexate with additional pretransplant ATG-Fresenius S. Project-No. (Fresenius): AP-AS-21-DE, Project-No. (ZKS): S020801 Medizinische Klinik I, Universitätsklinikum Freiburg.
- 11. Research project: MZO 00179906 (Czech Ministry of Health), Bioindicators in Hematology and Internal Medicine.
- 12. A Double-Blind, Randomized, Placebo-controlled Study of Two Different Schedules of Palifermin (Pre– and Post Chemotherapy and Pre– Chemotherapy only) for Reduction in Severity of Oral Mucositis in Subjects with Multiple Myeloma (MM) Receiving High Dose Melphalan followed by Autologous Peripheral Blood Stem Cell Transplantation (PBSCT): AMGEN, Protocol no. 20050219.
- 13. Military medical aspects of war surgery and war internal medicine (MO0FVZ0000503).

# DEPARTMENT OF FIELD SURGERY

### **Educational and Research Staff**

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### Structure and main tasks of the department:

Division of General Surgery

Páral Jiří – Head of the Group

Division of Traumatology and Burns Treatment

Čáp Robert – Head of the Group

#### Main tasks:

- 1. Undergraduate education of medical students
- 2. Postgraduate training of military medical specialists and surgeons
- 3. Expertise and referential work for needs of the Czech Army
- 4. Research
- Preparation of health personnel before foreign missions of the Czech Army

At present the Department of Field 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, the members of the Department perform both, undergraduate courses in field surgery for students of the Faculty of Military Health Science, 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. In the last several years, the Department has played important role in education and training of the personnel of field hospitals operating in foreign missions (Yugoslavia, Bosna-Herzegovina, Albania, Iraq, Afghanistan). Members of the Department also took part in that missions. Research and publication activities are also essential part of the Department work. The evidence of all above mentioned is particulary scientific success of Prof. A. Ferko. M.D., Ph.D., who was awarded the prize in medical research by the Ministry of Health in 1998 and his monography (Endovascular Treatment of Arterial Aneurysms) was awarded the Maydl's prize for the best publication in surgery in 1999.

#### **DEPARTMENT OF FIELD SURGERY**

### Participation in a foreign mission:

- F. Hošek UNTS, Zagreb, Croatia, 1996
- A. Ferko International Hospital, SFOR, Shipovo, Bosna and Hercegovina, 2001
- R. Čáp International Hospital, SFOR, Shipovo, Bosna and Hercegovina, 2001
- A. Ferko 11th Field Hospital, Army of the Czech Republic, ISAF, Kabul, Afghanistan, 2002
- J. Páral 11th Field Hospital, Army of the Czech Republic, ISAF, Kabul, Afghanistan, 2002
- M. Plodr 11th Field Hospital, Army of the Czech Republic, ISAF, Kabul, Afghanistan, 2002
- I. Žvák 11th Field Hospital, Army of the Czech Republic, ISAF, Kabul, Afghanistan, 2002
- D. Dobeš British Field Hospital, Op TELIC, Shaibah, Iraq, 2004
- J. Páral British Field Hospital, Op TELIC, Shaibah, Irag, 2004
- M. Plodr British Field Hospital, Op TELIC, Shaibah, Iraq, 2004
- P. Lochman British Field Hospital, Op TELIC, Shaibah, Iraq, 2004
- M. Plodr 1st Contingent of Field Hospital, Army of the Czech Republic, ISAF, KAIA, Kabul, Afghanistan 2007
- I. Žvák 1st Contingent of Field Hospital, Army of the Czech Republic, ISAF, KAIA, Kabul, Afghanistan 2007
- P. Lochman 4th Contingent of Field Hospital, Army of the Czech Republic, ISAF, KAIA, Kabul, Afghanistan 2008

### National textbooks:

- Endovascular Treatment of Arterial Aneurysms (Ferko et al.)
- Handbook of Surgery (Ferko et al.)
- Principles of War Surgery (Klein, Ferko et al.)
- X-ray Atlas of Bone Fractures (Žvák et al.)
- Small Atlas of Bandaging Techniques (Páral)

#### RESEARCH PROJECTS

#### ACETABULA - Crossover external fixator of acetabular fractures

Žvák, I., Frank, M., Klein, L., Šmejkal, K.

Supported by the Czech Republic Ministry of Defence, 2009–2011 (Project No.: OVUOFVZ200904)

Pelvic fractures associated with acetabular fractures are severe injuries both, in civilian practice and on the battlefield. It is necessary to solve the problem of temporary stabilization of these fractures, in consequence of improvement battlefield medical care, as well as medical evacuation. This stabilization has to be suitable for Medical Support System. Aggravation of ill health condition of patient and worse clinical outcome can be the result, if these fractures are not stabilized during temporary hospitalization and medical evacuation. The aim of this study is developement and biomechanical testing of new crossover external fixator frame for pelvic and acetabular fractures, based on commonly used external fixator device.

# Advanced Training Course: "Best Way of Training for Mass Casualty Situations"

Klein, L. in collaboration with M. Michaelson, M.D. and the team of RAMBAM Health Care Campus in Haifa, Israel

Supported by NATO Science for Peace and Security (SPS) Programme, 2009 – 2010 (Project No.: CBP.MD.ATC.983603)

A three-day course sponsored by the NATO Science for Peace and Security programme on 16 –18 November, 2009, in Haifa, Israel, provided training for emergency management professionals on staff teaching and preparation methods in the face of mass casualty situations. 26 participants from the Partnership for Peace programme and Mediterranean Dialogue countries attended and graduated from the course.

# LEPIDLO – Testing of possible use of cyanoacrylat tissue glues in high risk intestinal anastomoses

Páral, J., Plodr, M., Lochman, P., Šubrt, Z., Klein, L.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200804)

The experimental study is aimed to validate technical and biological possibilities of the cyanoacrylate tissue adhesives in the intestinal surgery and its using on the healing of high-risk anastomoses as a supporting element of conventional suturing.

# NOTES – Surgical treatment of the digestive tube's penetrating injuries using Natural Orifice Transluminal Endoscopic Surgery

Klein, L., Dušek, T., Ferko, A., Lochman, P., Novotný, L., Páral, J., Šubrt, Z. Supported by the Czech Republic Ministry of Defence, 2009–2011 (Project No.: OVUOFVZ200903)

The project is focused on creating the non-devastating penetrating injury model of the digestive tube and testing the possibility for applification of the NOTES technology in the treatment. The method uses natural body's orifice (mouth, vagina, urethra, anus) for intraluminal instalation of the double channel operating endscope into the targeted digestive tube's organ. Through its wall it is put into the free abdominal cavity. Our hypothesis supposes using this method itself or in combination with laparoscopic technique for traumatic defect's closure in the wall without laparotomy. Project will be provided in the porcine model. Animals will be observed for the period of two weeks, and after euthanasia they will be obducted for detection of postoperative complications.

# DEPARTMENT OF GENERAL AND EMERGENCY MEDICINE

#### **Educational and Research Staff**

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The Department of General Medicine was established at the J. E. Purkyně Military Medical Research and Postgraduate Institute in 1983. It was formed from the former Group of Military Medical Service Organization in Peacetime which existed at the Department of Military Medical Service Organization. The reason for the foundation of the Department was the need to educate military doctors in newly established branch of General Medicine that became the basic branch for military doctors who were in charge of primary care in the Military Medical Service organizational structures. Specialization in the branch of internal medicine was insufficient and did not meet professional requirements for individual medical practice at Units and later at Garrison Dispensaries. First Specialization Exams in this new basic specialization branch were held in February 1985. 525 military doctors passed the Specialization Exam in General Medicine till 31st December 2004.

Since 1997, the work at this Department has focused more on prehospital 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 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.

The Department of General and Emergency 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 as well as education and training for Military Medical Service Reserves according to their assignments. Until 2005, the Department was the leading department focused on specialization training of military doctors served in the Czech Army Medical Service. It organizes pre-graduate courses in emergency medicine in Master's Study Programme, but especially post-graduate education of doctors, health care workers and nurses. The Department of General and Emergency Medicine collaborates 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.

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 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 od 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 lasts 3 weeks and offers a lot of useful knowledge and skills, e.g. making intravenous access. The graduates of this course must be able to give first aid to casualty with very realistic looking injuries prepared by proffessional masker at the end of the course.

The Department is a co-ordinating centre of scientific work 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 service 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 MILITARY HEALTH SERVICE ORGANIZATION

#### **Educational and Research Staff**

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The Department of Military Health Service Organization is the primary department which offers military and professional training and education for students of medicine, pharmacy, military medical management, as well as for paramedical personnel to the extent necessary for the execution of their duties in a wartime health care system. It organizes postgraduate education for military doctors, pharmacists and bachelors in advanced courses and the training of reserve medical officers. It offers specialized training in the field of military health service administration and management. It is responsible for providing career courses to military medical personnel.

The subject called "Organization and Tactics of Military Medical Service in Wartime" familiarizes students with the activities of the Medical Service in combat conditions, with the assignments and principals of medical support to troops, the organizational structure of the military health service in combat, the operation of particular medical establishments and the principles of human rights – in particular those defined by the Geneva Convention. The department carries out training in medical support planning, in working with map, triage of casualities, deployment of field medical facilities, calculation of medical casualities and the Military Medical Service management.

Other subjects provide students with knowledge in tactic, logistics, communications, military engineering, topography, and NBC defence. All these subjects are a part of the general military education of Czech Army professionals and are prerequisites of mastering the subject of military medicine.

#### DEPARTMENT OF MILITARY HEALTH SERVICE ORGANIZATION

The department teaches disaster medicine, mainly focused on planning, administration, management and evacuation.

The department serves as a coordinating centre for the field of research work in the discipline of the Military Medical Service Organization and Management. It participates in achieving a better quality of organization in medical units, formations, facilities, operational regulations, and management methods in wartime. It sets out the basic materials and proposals from the above – mentioned areas for the Czech Army Medical Service authorities.

# DEPARTMENT OF MILITARY HYGIENE

### **Educational and Research Staff**

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HLÚBIK Pavol (Head of the Department)

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In its educational activities, the department carried on lectures for undergraduate studies with emphasis on military aspects and experience acquired from contacts with NATO armies. Military field training was performed in Vyškov. The results of its own research and knowledge gained from NATO armies in the area of hygiene support to troops in both peacetime and wartime were included in the teaching. The department has been paying more attention to topical problems in preventive medicine within training for the state examination and in postgraduate training.

The department's lectures comprise both undergraduate and postgraduate studies (medical students, doctors, medical managers, nurses). These activities are aimed at general and special part of hygiene and preventive medicine (communal hygiene, mental hygiene, occupational hygiene, hygiene of nutrition). The department participates in many courses for the postgraduate study of doctors:

- postgraduate courses in the field of occupational hygiene
- postgraduate courses in the field of nutrition, obesity, body composition, and risk factors of coronary heart disease
- prevention of socio-pathological phenomena in the Army

#### RESEARCH PROJECTS

### Be in a good form and condition after parturition!

Fajfrová, J., Hlúbik, P., Vosečková, A., Pavlík, V., Dřevová, J.

Supported by the Internal Grant Agency of the Czech Republic Health Service, 2009–2009 (Project No.: 9933-2)

Aim of project is to contact women after childbirth and involve them in concern about healthful nutrition, exercise and psychological changes after childbirth. Within the project, besides physical examination, will be done biochemical and anthropometric examination. Due to this will be determined nutritional state of participant maters. These results together with evaluation of daily food records will be base for pointed individual intervention within nutritional and physical training counseling. Counseling psychology and psychotherapy will be a part of intervention. To assess of changes of health and nutritional state of maters will be done follow-up examination.

#### DEPARTMENT OF MILITARY HYGIENE

### Change of body proportion of school children

Střítecká, H.

Supported by the Internal Grant Agency of the Czech Republic Health Service, 2009–2010 (Project No.: 9985)

The aim of project is to describe dietary habit school children using simple food frequency questionnaire, which will be focused on the consumption of meat, fish, milk, eggs, vegetables, fruit, type of beverage and sweets. Children will complete 24-hour recall too. The next is compare basic anthropometrical parameters (weight, height, waist, %body fat) on elementary school children in 2nd, 4th, 6th and 8th grade in district Hradec Kralove, Pardubice and Liberec, split not only by age, gender, but by living environmental (Town, village, small town), too.

# DEPARTMENT OF PUBLIC HEALTH

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The primary mission of the Department of Public Health (DPH) is focused on integration of health care, pharmaceutical and managerial branches to support Medical Service of the Czech Army, particularly in the field of disaster medicine and emergency planning.

The DPH consists of three groups – the Health Care Management Group, the Military Pharmacy Group and the Fitness Preparation Group.

Teaching activities are one of its main tasks. The DPH takes part in undergraduate programmes in military health care management, military medicine, military pharmacy and military rescue workers. In addition, teachers run courses and training programmes in health care management, medical emergency planning, critical incident stress management, bio-informatics, health economics and medical law. The DPH participates in preparation of troops for foreign missions.

Research activities play an important role. The research is focused on the process modeling of health facilities particularly in emergency situations, geographical information systems in emergency planning, telemedicine and medical visualization. Members of the department concentrate on

#### DEPARTMENT OF PUBLIC HEALTH

development and application of information technologies in all the mentioned fields. By actively participating in both local and international conferences, the department has established valuable co-operations with national and foreign universities.

The department has been involved in international projects creating centers and methodology for education in health care management and for regional health policy.

Czech Science Foundation, Foundation of Ministry of Health, and Foundation of Ministry of Defence have supported the research projects.

## DEPARTMENT OF RADIOBIOLOGY

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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 method, methods of proteomic analysis and of 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 postradiation damage in the main objective of the department. The aim of investigation in the medium-term horizont is discovery and practical introduction of bio-dosimetric markers as well as repeated 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 work places 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 form of pre-gradual and post-gradual education mainly in doctoral studies. The main educational activity was to give lectures in military radiobiology. The main topics are: the nuclear weapons effects on living organism, the possibilities of the protection and medical treatment of irradiated persons. Next special military subjects are disaster medicine and NBC protection etc. which are taught at the Faculty of Military Health Sciences, include topics which are presented by the instructors of our department.

#### RESEARCH PROJECTS

# Differential proteome analysis of bacterial Francisella tularensis glycoand phospho-proteins

Balonová, L., Klimentová, J., Stulík, J., Tichý, A., Hernychová, L., Bílková, Z. Supported by the Ministry of Education, Youth and Sports, 2008–2010 (Project No.: ME08105)

Post-translational modifications (PTM) of proteins play crucial role in the assembly, degradation, structure, and function of exprimed genes. PTM of proteins of bacterial pathogens strongly influence the nature of interaction with host cell system. However, little is known about the character and function of such modifications for intracellular bacteria. The main objective of the project is focused on the analysis of Francisella tularensis proteins, their post-translational modifications as glycosylation and phoshorylation. The aim of the research is to describe their structure in context with pathogenity and virulency of various subtypes of bacterial strains, differing in level of virulency. The strategy approach will be based on technologies that combine modern separation methods with mass spectrometry structure identification. The biofunctionalized magnetic nanoparticles with lectins, metal ions or specific mono(poly)clonal antibodies permit sufficient selectivity for glycosylated or phoshporylate.

# INDIKÁTORY II – Reverse detection of received ionizing radiation dose by monitoring of cell population changes using biophysical methods

Šinkorová, Z., Österreicher, J., Kročová, Z., Pejchal, J., Zárybnická, L., Tóthová, I.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200809)

To establish extrapolated calibration curve for determination the received dose in individuals exposed to ionizing radiation which could be practical used in the Czech army and to design the best enlistment of this biophysical method into the therapeutic-transfer system of the Czech army.

# New biological methods of the received dose determination

Matiasovic, J., Šinkorová, Z., Faldyna, M., Zárybnická, L., Tichý, A., Vilasová, Z.

Supported by the Ministry of Education, Youth and Sports, 2008–2010 (Project No.: 2B08028)

In case of accidental irradiation of a human body (irradiation accidents, inappropriate manipulation with radioactive waste, terroristic attack) the medical personnel have to cope with the fundamental task to determine the received dose of ionizing radiation in the most accurate and rapid way. Based on such analysis an appropriate treatment of irradiation disease must begin immediately. Current biodosimetric methods are time-consuming and thus do not fulfill the main task – to begin the treatment as soon as possible, preferably within 24 hr after exposure. In the attempt to provide a faster tool for an irradiation-associated body damage estimate we propose to use multiparametric flow cytometry and microarray analysis of blood lymphocytes cultivated for a defined time interval upon irradiation, which would allow for the received dose estimate by determination of apoptosis progression or changes in protein expression in lymphocyte subsets with different radiosensitivity.

# RADSPEC – Short-term and long-term nonspecific changes in organisms exposed to high and low doses of nerve agents on cellular and molecular level

Pejchal, J., Vilasová, Z., Tichý, A., Mervartová, L., Zárybnická, L.

Supported by the Czech Republic Ministry of Defence, 2008–2009 (Project No.: OVUOFVZ200812)

The goal of this study is to evaluate expression of perspective biodosimetric markers, such as fosfo-elk-1, fosfo-atf-2, fosfo-CREB, fosfo-p53 (aktivated at serine 15), on the model of nervous paralytic compound (soman) intoxicated rats to investigate their radiospecificity.

RONSDOZ – Noninvasive measurement of proinflamatory markers of oxidative stress in irradiated as an indicator of received dose of radiation. Protective role of acetyl-L-carnitine

Vávrová, J., Österreicher, J., Tichý, A., Pejchal, J., Řezáčová, M.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200806)

To evaluate whether the bioindicators of oxidative and nitrative stress and inflammations of the airways can be used as biodosimetric markers after exposure to gamma radiation, after whole-body and partial irradiation of rats. To evaluate protective effect of acetyl-L-carnitine.

# Study of factors in a tissue microenviroment that influence the process of skeletal muscle reparation

Filip, S., Šinkorová, Z., Vávrová, J., Mokrý, J., Čížková, D., Tichý, A., Řezáčová, M.

Supported by the Czech Republic Grant Agency, 2008–2010 (Project No.: GA304/08/0329)

Degeneration of the cardiotoxin-damaged skeletal muscle is followed by a subsequent tissue repair, which is a multistep process that is well morphologically defined. We modify this process with gamma irradiation before and after induction of a muscle damage, which impairs a natural course of myofibre regeneration and makes a space for transplanted exogenous cells (CD117+, Sca-1+ bone marrow cells). Progeny of transplanted exogenous vector, lacZ gene, is identified histochemically. A part of the study involves examination of kinetics of haemopoietic stem cells after lethal irradiation and transplantation of stem cells.

# DEPARTMENT OF TOXICOLOGY

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The Department 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. It comprises two laboratory groups – a biochemical (biochemical laboratory, laboratory of organic synthesis, laboratory, decontamination laboratory) and an experimental therapy group (toxicological laboratory, pharmacological laboratory, neurophysiological laboratory, behavioral laboratory, genotoxicological laboratory). structure permits the complex study of highly toxic substances including chemical warfare agents with aims to determine their action on biochemical. behavioral, histochemical, pharmacological and neurophysiological level, to study and develop antidotes, to analyse 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. The main educational activity task was to give lectures for undergraduate and post-graduate studies dealing with problems of biological effects of real and potencial 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 of Toxicology also participates in the teaching of toxicology in disaster medicine.

# **RESEARCH PROJECTS**

# Butyrylcholinesterase and aldoximes – bioscavengers for detoxification of organophosphates

Kolečkář, V., Kuča, K., Jun, D., Žďárová Karasová, J., Musilová, L., Binder, J., Bosak, A., Berend, S., Čalič, M., Vrdoljak, A., Šinko, G., Radiš, B., Kovarik, Z.

Supported by NATO Cooperative Grant, 2007–2009 (Project No.: CBP.EAP.CLG 983024)

Current antidotes for organophosphorus compounds (OP) poisoning consist of a combination of pretreatment with carbamates (pyridostigmine bromide), to protect acetylcholinesterase (AChE) from irreversible inhibition

by OP compounds, and post-exposure therapy with anti-cholinergic drugs to counteract the effects of excess acetylcholine and oximes to reactivate OPinhibited AChE. One part of our previous research (RIG-PDD(CP)-(CBP.EAP.RIG 981791)) has been focused on conventional and a series of newly synthesised pyridinium oximes and therapy in tabun and soman poisoning. Oximes with the oxime group in para-position on the pyridinium ring were better reactivators of tabun- than of soman-inhibited AChE. but oximes with the oxime group in ortho-position were effective protectors of acetylcholinesterase against tabun or soman inhibition. Moreover, we had shown that a promising treatment in tabun poisoning by oximes could be improved if oximes are also applied as pretreatment drugs. In this project we would like to move the focus of our research on butyrylcholinesterase (BChE) that is being extensively investigated by several groups and judged to be the most suitable bioscavenger. An aim of the project will be optimisation of oximes that in combination with BChE could work as a catalytic scavenger in continuous decomposition of organophosphorus compounds. This approach turns the irreversible nature of the OP: ChE interaction from disadvantage to an advantage; instead of focusing on OP as an anti-ChE, one can use ChE as an anti-OP.

# Countermeasure against chemical terrorism – development of new antidotes against nerve agents

Kuča, K., Musílek, K., Jun, D.

Supported by the Ministry of Education, Youth and Sports, 2006–2009 (Project No.: ME 865)

The project is aimed at searching the most common pesticides as potentional nerve agents, and testing to inhibite in vitro enzyme Acetylcholinesterase (AChE).

# Development of novel acetylcholinesterase inhibitors as treatment of Myasthenia Gravis

Musílek, K.

Supported by the Czech Republic Grant Agency, 2009–2011 (Project No.: GP203/09/P130)

The treatment of autoimmune disease Myasthenia gravis (MG) is based on a combination of various drugs. The acetylcholinesterase (AChE) inhibitors are used at the first stage of MG (e.g. pyridostigmine bromide) as a symptomatic treatment. These drugs are effective both in peripheral and central nervous system (cross blood-brain barrier-BBB). Their administration causes a huge amount of undesirable effects and it is necessary to reduce their dosage. The preparation, in vitro testing and structure-activity relationship (SAR) of novel AChE inhibitors will be done in our project. Novel

compounds will be designed as the bispyridinium molecules with various functional groups and linkers. The bisquaternary structure should guarantee the minimal penetration through BBB and their peripheral effectiveness. SAR will be considered via experimental results (in vitro – IC50) and quantitatively via computer programmes (QSAR). The peripheral AChE inhibitors suitable for application in vivo on animals and for further testing as relevant candidates for MG treatment should become the project results.

# Development of novel antidotal treatment against organophosphorus pesticides

Kuča, K., Marek, J., Pohanka, M., Žďárová Karasová, J., Musílek, K.

Supported by the Ministry of Education, Youth and Sports, 2009–2012 (Project No.: ME09086)

The development of the broad-spectrum acetylcholinesterase reactivator against organophosphorus pesticides (OPP) is the main aim of the whole project. The synthesis and in vitro evaluation of novel or formerly prepared compounds will be used for this purpose. The structure-activity studies will be figured out for its determination. Such reactivator will be further tested in vivo and might become a candidate for the preclinical trials against OPP.

# FARMAKO – Determination of important pharmacokinetic and biochemical parameters and evaluation of blood-brain barrier penetration using drugs introduced to Czech Army

Žďárová Karasová, J., Kuča, K., Pohanka, M., Novotný, L.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200811)

The aim of this project is to characterize pharmacokinetics of substances using in therapy by intoxications. Mainly their distribution in body tissues, in vitro and in vivo testing of ability to penetrate into central nervous system and their possibility to injury brain. At the same time we will evaluate some important biochemical data, which can be influenced by this therapy.

# Genetic profile of biotransformation and DNA repair genes in cancer patients from the Czech Republic

Vodička, P., Souček, P., Štětina, R.

Supported by the Internal Grant Agency of the Czech Republic Health Service, 2005–2009 (Project No.: NR8563)

The whole project is aimed at the evaluation of possible links between individual genetic background (evaluation of polymorphisms in both DNA repair genes and XME genes – involved in the metabolism of xenobiotics),

and expression levels of studied polymorphic genes in selected patients with various cancer and healthy controls from population of the Czech Republic. On a selected cohort, we will attempt to determine gene expression for selected XME (e. g. CYP1B1, EPHX1, NQO1) and DNA repair genes (XPD, XPC, XRCC1). Expression profiles of DNA repair and XME genes will be compared with genetic profiles and confronted with outcomes from the functional enzymologic and DNA repair tests. The assays for nucleotide excision repair and base excision repair will be based on the employment of comet assay.

# INHIBITOR – Novel inhibitors of acetylcholinesterase as prophylaxis of nerve agent poisonings

Musílek, K., Pohanka, M., Žďárová Karasová, J.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200805)

This project is focused on finding of suitable reversible acetylcholinesterase inhibitor as a replacement of prophylactic drug pyridostigmine. For this purpose, 100 reversible AChE inhibitors will be prepared, evaluated in vitro and compared with prophylactic drugs used in the Army of the Czech Republic. Regarding the structure-activity relationship, the best reversible AChE inhibitor will be determined and recommended for in vivo evaluation.

# MORČE – Influence of the nerve agent and reactivators of acetylcholine esterase on the Guinea pig

Pohanka, M., Novotný, L., Jun, D., Kuča, K., Žďárová Karasová, J.

Supported by the Czech Republic Ministry of Defence, 2009–2011 (Project No.: OVUOFVZ200905)

The aim of this project is determine the physiological activity of Acetyl Choline Esterase (AChE) and detection of LD50 of inhibitors paraoxon, tabun, cyklosarine and reactivators AChE pralidoxim, obidoxim, trimedoxim, HI-6, methoxim. Next task is asses protective effectively of reactivators. Also detection of AChE activity in organs after intoxication with nerve compound and following reactivation. We will also follow up plasmatic concentration of reactivatos in plasma after i.m. administration and morphological changes in the tissues.

# ORCHIDS – Evaluation, optimisation, trialling and modelling procedures for mass casualty

Simpson, J., Cabal, J., Kuča, K.

Supported by the Executive Agency for Health and Consumers, 2008–2011 (Project No.: 100940)

The ORCHIDS project (Optimisation through Research of Chemical Incident Decontamination Systems) involves the evaluation of emergency decontamination methods, and the exercising and modelling of established mass casualty decontamination facilities. The project will deliver quantitative evidence on the optimum techniques for dealing with a range of potential contaminants and scenarios requiring emergency decontamination. A full range of issues will be addressed, from applied toxicological research to mass casualty decontamination exercising and modelling. This applied research will generate evidence-based guidelines on the optimum techniques for effective mass casualty decontamination, which will be disseminated by the project team through a network of EU Partners and stakeholders, which will be established and developed during the project. In addition, the project will consider the provision for minority and vulnerable groups in emergency decontamination, and will produce public information materials (leaflets and educational tools) designed to help increase knowledge, trust and confidence in emergency decontamination provision.

# OTRAVA – Novel prophylactic antidotes of nerve agent poisonings based on scavengers

Jun, D., Kuča, K., Musílek, K., Pohanka, M.

Supported by the Czech Republic Ministry of Defence, 2009–2012 (Project No.: OVUOFVZ200902)

Organophosphorus compounds are weaponized in some countries as chemical warfare agents (sarin, tabun, VX). These compounds inhibit enzymes acetylcholinesterase and butyrylcholinesterase. As antidotes of poisonings by these compounds are often used anticholinergics (atropine, benactyzine) and cholinesterase reactivators (pralidoxime, obidoxime, HI-6). Favorable solution is using of specific enzymes (mostly cholinesterases) as scavengers, able to catch toxic organophosphorus compounds in the bloodstream before they start their toxic effect in the organism. We would like to find suitable cholinesterase reactivators, with the aim to suggest and test their combination with enzymes as pseudocatalytic bioscavenger. This combination allows increase prophylactic efficacy of administered enzyme.

# PROTEIN – Biosensors for determination of nerve agents and yperites using recombinant proteins and nanotechnology

Pohanka, M., Kuča, K., Musílek, K., Žďárová Karasová, J., Kassa, J.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200807)

The proposed project is aimed at construction of enzyme based biosensors with immobilized ether cholinesterase and/or dehalogenase for detection of nerve agents and yperite using highly innovative nanotechnologies.

# REAKTIVÁTOR – Robotized system for in vitro evaluation of novel rectivators of acetylcholinesterase inhibited by nerve agents

Cabal, J., Kuča, K., Jun, D., Musílek, K., Pohanka, M.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200801)

The aim of this project is to develop new robotic system based on sequential injection analysis (SIA) for testing of reactivation potency of newly synthesized antidotes against nerve agent poisonings.

# SUBSTANCE – Development of novel decontaminants and disinfectants of skin based on micellar compounds

Cabal, J., Kuča, K., Novotný, L., Kassa, J., Pohanka, M., Jun, D., Musílek, K. Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200803)

The aim of this project is a development of new compound or mixture with a good decontaminant efficacy against wide spectrum of chemical warfare or pesticides. The second aim will be also to gain the universal disinfectant, which will be effective against many kinds of microbes.

#### YPERIT - Potential interference of toxic properties of sulphur mustard

Štětina, R., Svobodová, H.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200810)

The aim of this project is to estimate: 1)The influence of poly-(ADP ribose) polymerase (PARP) inhibitors on to the cytotoxic and cytostatic effect of sulphur mustard. The influence of of PARP inhibitors on the DNA repair (repair of cross-links) induced by SM will be studied in detail in mammalian and human cells. Both normal and DNA repair deficient mutant cells will be used. 2) The influence of selected antioxidants on the cytostatic effect of SM.

The oxidative DNA damage and its relationship to the cytotoxicity will be studied. 3) The influence of combined treatment with PARP inhibitors and antioxidants on the cytostatic effect of SM.

### **COOPERATION**

In 2009, the Department of Toxicology has continued in the cooperation with various research institutes (the National Poison Control Centre, Military Medical Academy, Belgrade – Republic of Serbia, Medicinal Science Division, Korea Research Institute of Chemical Technology, Taejon – Korea, Institute for Medical Research and Occupational Health, Zagreb – Croatia, Department of Pharmacology and Therapeutics, Faculty of Medicine and Health Science, United Arab Emirates University, Al Ain – United Arab Emirates, Institute of Pharmacology and Toxicology of Federal Armed Forces Medical Academy Munich – Germany, TNO Prins Maurits Laboratory in Rijswijk – the Netherlands, Department of Toxicology of NBC Research Centre of Military Medical Academy in Sofia – Bulgaria, Centre de Recherches du Service de Santé des Armeés /CRSSA/ Grenoble – France) in the field of development of prophylactic and therapeutical means against nerve agents and organophosphorous 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 mutageneses and carcinogenesis, the Department of Toxicology has also continued in cooperation with the Institute of Nutrition Research in Oslo (Norway) and the Institute of Preventive and Clinical Medicine in Bratislava (Slovakia).

# INSTITUTE OF MOLECULAR PATHOLOGY

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Administrative, Secretarial and Other Staff

PETROVÁ Zdenka petrova@pmfhk.cz

**Postgraduate Students** 

BRYCHTA Martin brychta@pmfhk.cz

DAŇKOVÁ Věra (since 01 September 2009)

DRESLER Jiří DŘEVÍNEK Michal

FUČÍKOVÁ Alena (since 01 August 2009) fucikova@pmfhk.cz
HÄRTLOVÁ Anetta hartlova@pmfhk.cz
KONEČNÁ Klára konecna@pmfhk.cz
KUBELKOVÁ Klára kubelkova@pmfhk.cz

MARUŠOVÁ Pavla

MAZGAJOVÁ Monika (since 01 September 2009) mazgajova@pmfhk.cz STRAŠKOVÁ Adéla straskova@pmfhk.cz

## TAMBOR Voitěch

The institute of Molecular Pathology, as one of the successors of the Institute of Radiobiology and Molecular Pathology, is a research centre focused on the application of advanced technologies of functional genomics to bio-medical defence research. Scientific work is preferably aimed at the studies of the host-pathogen interactions at the molecular level. The objectives of this research splits in three main topics: biomolecular signatures of biological agents potentially abused for the military, terroristic or bio-crime acts, intracellular fate of ingested microbes and finally the modulation of host cell signalling and gene expression by ongoing infection. The favourite microbial model is live vaccine strain of Francisella tularensis, a gram-negative facultative intracellular bacterial pathogen from the gamma subdivision of Proteobacteriae.

The second branch of the research involves the clinical studies utilizing the post-genomic approaches for identification of new biomarkers of different pathological processes or side effects of anti-tumor therapy.

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, Ph.D. students, and under-graduate students to realize complex studies oriented on the analyses of living system response to external (and internal, modulatory) signals encompassing the chemicals, biologically active bio-molecules, physical influences (temperature, radiation, etc.), and microorganisms.

During the year 2008 the Institute traditionally cooperated with the military medical and research facility in Sweden (FOI NBC-Defence, Umea) on preparation of Francisella tularensis knock-outs. The further scientific contacts involved Max-Planck Institute, Berlin, Germany - construction and maintenance of Francisella tularensis 2-DE database, National Center for Glycomics and Glycoproteomics, Department of Chemistry, Indiana University, USA - mass spectrometry analysis of bacterial glycoproteins, Unité de Pathogénie des Infections Systémiques, Faculté de Médecine, Necker-Enfants Malades, Paris, France - comparative proteomic studies of Francisella tularensis deletion mutants, Institute of Virology, Slovak Academy of Science, Bratislava, Slovak Republic - proteomic analysis of acetonitrile extracts of Coxiella burnetii, and, finally Institute of Molecular Systems Biology, IMSB, ETH Zurich – proteome analysis of outer membrane and lipd rafts component of host cells infected by Francisella tularensis and Department of Microbiology and Parasitology, University of Rijeka microscopical analysis of microbial intracellular trafficking.

Within the frame of the Czech Republic, the Institute has useful contacts with the Institute of Microbiology, Czech Academy of Science, Prague, the Institute of Parasitology, Czech Academy of Science, Česke Budějovice, the Faculty of Science, Charles University, Prague, the University Hospital in Hradec Králové, Department of Biological and Biochemical Science, University of Pardubice, Pardubice, 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 and Ministry of Defence. Currently, the Institute for Molecular Pathology has 10 full-time permanent employees, 8 scientists, 2 technicians and 1 administrative worker, two additional scientists have part-time positions and, finally, and 1 postdoc is supported from grant funds. The Institute has currently 10 PhD students and, furthermore, several undergraduates have been working on their diploma thesis in the Institute.

#### RESEARCH PROJECTS

## Array technologies for BSL3 and BSL4 pathogens

Macela, A., Butaye, P., Sjostedt, A., Cassone, A., Veljkovic, V., Stulík, J., Homan, W., Toman, R.

Supported by EU COST Programme, 2005–2009 (Project No.: COST Action B28)

The main objective of the Action is to increase knowledge on BSL3 and BSL4 agents in order to support the development of more accurate diagnostics, vaccines and therapeutics, and to better understand epidemiology of these highly pathogenic micro-organisms that can be potentially used as biological weapons. The concrete scientific programme is focused on the identification of target genes or gene products for the development of specific diagnostic and characterization tools. Seventeen European countries together with Canada take part in this project and individual laboratories are divided according to applied technologies into five different workgroups — Flow cytometry and micro-array, Antigenicity, Proteomics and glycomics, Genomics and Microbiology.

BIODEFENCE – Classification of biological agents – support of an international project "Establishment and management of a common database of B-agents – A European Laboratory Biodefence Network

Hernychová, L., Hubálek, M., Macela, A., Kubelková, K.

Supported by the Czech Republic Ministry of Defence, 2009–2011 (Project No.: OVUOFVZ200901)

The goal of the project is to gather typing data for B-agents listed in project of the european biological database by the mean of mass spectrometry (MALDI-TOF, tandem mass spectrometry) and molecular biology (real-time PCR, MLST).

# Development of proteomic methods for deeper quantitative analysis of plasma proteome

Lenčo. J.

Supported by the Czech Republic Grant Agency, 2009–2011 (Project No.: GP301/09/P241)

The increased availability of latest proteomic technologies has allowed proteomics to focus on biomarkers representing an especially important area. From the clinical viewpoint, the most promising source of such markers is plasma. However, plasma is characterized by serious obstacles for proteomic analysis, namely huge complexity and extremely wide protein concentration range. To overcome these hurdles, the general possible solutions include simplification of the mixture to specific peptides, and protein concentration equilibration. These approaches have been already published, however these are mostly iTRAQ-incompatible. iTRAQ is a unique and popular quantitative method for shotgun proteomics. Within the scope of the project, new iTRAQ-compatible proteomic techniques will be developed, namely the combination of iTRAQ with specific peptide isolation as well as with protein concentration equilibrating approaches. After optimalization, these methods will be implemented into the quantitative analysis of plasma, focusing on markers for hypertophic cardiomyopathy.

# Differential proteome analysis of bacterial Francisella tularensis glycoand phospho- proteins

Balonová, L., Klimentová, J., Stulík, J., Tichý, A., Hernychová, L., Bílková, Z. Supported by the Ministry of Education, Youth and Sports, 2008–2010 (Project No.: ME08105)

Post-translational modifications (PTM) of proteins play crucial role in the assembly, degradation, structure, and function of exprimed genes. PTM of proteins of bacterial pathogens strongly influence the nature of interaction with host cell system. However, little is known about the character and function of such modifications for intracellular bacteria. The main objective of the project is focused on the analysis of Francisella tularensis proteins, their post-translational modifications as glycosylation and phoshorylation. The aim of the research is to describe their structure in context with pathogenity and virulency of various subtypes of bacterial strains, differing in level of

virulency. The strategy approach will be based on technologies that combine modern separation methods with mass spectrometry structure identification. The biofunctionalized magnetic nanoparticles with lectins, metal ions or specific mono(poly)clonal antibodies permit sufficient selectivity for glycosylated or phoshporylate.

# FRANCIS – Development of new prophylactic tools against Francisella tularensis infection

Stulík, J., Červený, L., Dresler, J., Härtlová, A., Hubálek, M., Lenčo, J., Link, M., Klimentová, J., Kročová, Z., Filipp, D.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200808)

Identification of new candidate molecules of protein origin suitable for the construction of better defined live or subunit vaccines and elucidation of the process of antigen presentation of tularemic peptides as a key event for the development of new strategies to treat and prevent infection with Francisella tularensis.

# INDIKÁTORY II – Reverse detection of received ionizing radiation dose by monitoring of cell population changes using biophysical methods

Šinkorová, Z., Österreicher, J., Kročová, Z., Pejchal, J., Zárybnická, L., Tóthová, I.

Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200809)

To establish extrapolated calibration curve for determination the received dose in individuals exposed to ionizing radiation which could be practical used in the Czech army and to design the best enlistment of this biophysical method into the therapeutic-transfer system of the Czech army.

# New analytical approaches for identification of proteins with significant attributes for virulence and pathogenity of bacteria

Bílková, Z., Horák, D., Hernychová, L., Kučerová, Z.

Supported by the Czech Republic Grant Agency, 2009–2011 (Project No.: GA203/09/0857)

The project aims at the innovative analytical approach based on biofunctionalized magnetic micro/nanoparticles combined with microfluidic analytical device (m-TAS). Benefits provided by both systems open the feasibility to use this microanalyzator for effective separation of bacterial proteins from highly complex mixture. The analyses will be focused on significant attributes of virulence and pathogenesis within intracellular

parasite. New analytical strategy combined with mass spectrometry (MS) enables to isolate and characterize the structure of low-abundant glykoproteins, phosphoproteins and in other way modified proteins from cell lysate or membrane fractions of bacteria and identify biomolecules predicting the virulence of bacteria strains. The immobilized magnetic affinity reactor (IMAR) with specific ligand used for isolation and purification of proteins significantly facilitates the identification of protein fingerprint by MS even for bacterial protein in submicromolar concentration.

## Protein biomarkers in hypertrophic cardiomyopathy

Pudil, R., Stulík, J., Hubálek, M., Lenčo, J.

Supported by the Internal Grant Agency of the Czech Republic Health Service, 2007–2009 (Project No.: NR9253)

The aim of the project is detection and identification of new plasma biomarkers that could be used for the unambiguous diagnosis of hypertrophic cardiomyopathy in the clinical praxis in the future.

# Proteome analysis of extracytoplasmic stress response in Francisella tularensis strain with different virulence

Stulík. J.

Supported by the Ministry of Education, Youth and Sports, 2007–2010 (Project No.: OC 151)

Proteome analysis of extracytoplasmatic stress response in cell membrane of intrcellular pathogen Francisella tularensis.

# Study of B-cell interaction with intracellular pathogen Francisella tularensis

Kročová. 7.

Supported by the Czech Republic Grant Agency, 2007–2009 (Project No.: GA310/07/0226)

Originally, it was thought that immunity against Francisella tularensis is predominantely cell-mediated. However, recent studies clearly show both contributions of specific antibodies in the host defense and the role of B cells in non-specific early protective immunity. Direct interaction of B cells with either F. tularensis or its LPS has not been studied, yet. In proposed project we plan to prove this interaction and elucidate further destiny of bacteria inside of B cells using flow cytometry, determination of CFU and microscopic methods (electron, fluorescent and confocal). The activation of selected cell signaling pathways, apoptic pathways and induction of transcription of cytokines and their receptors characteristic for B cells will be examined by

means of cDNA arrays. The semi-quantitative and quantitative analysis of mRNA's for selected genes will be accomplished by RT-PCR and real time RT-PCR. The quantitative changes on the protein level will be verified by western blot, iTRAQ or SILAC technologies combined with MALDI TOF/TOF mass spectrometry and by ELISA. The identification of individual components, including their phosphorylation status, of isolated lipid rafts by immunoblotting or mass spectrometry will provide information about functional signalosom complex formation in the course of in vitro infection.

## VIVARIUM

#### **Educational and Research Staff**

NOVOTNÝ Ladislav (Head of the Department) ŠPELDA Stanislav (till 31 August 2009) novotnyl@pmfhk.cz spelda@pmfhk.cz

#### **Technicians**

BOCKOVÁ Irenea (Head of the Group) ETFLAIŠOVÁ Petra JUNKOVÁ Irena PUDÍKOVÁ Margita SLAVÍK Jaroslav

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

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, hamsters, rabbits, laboratory dogs of BEAGLE, pigs or mini pigs and sheep. 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 the Military Health Sciences fully in compliance with the legal standards of the protection against cruelty to animals.

The vivarium with the operating block is intesively used above all for experiments on big experimental animals – dogs and pigs. 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.

The international course led by U.S. ARMY medical service personnel and other similar training activities belong to this part.

On 4 November 2008 the vivarium was accredited for use again for 5 years (till 4 November 2013) by the Central Board for Animal Protection and for 5 years (till 4 November 2013) as a breeding institution. The Faculty of

Military Health Sciences also owns the refreshed certificate of the Ministry of Health for testing pharmaceuticals valid until 31December 2010. Nowadays, the Faculty of Military Health Sciences does not have its own certificate of right laboratory practice given by the State Institute for Drugs.

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.

### RESEARCH PROJECTS

# MORČE – Influence of the nerve agent and reactivators of acetylcholine esterase on the Guinea pig

Pohanka, M., Novotný, L., Jun, D., Kuča, K., Žďárová Karasová, J.

Supported by the Czech Republic Ministry of Defence, 2009–2011 (Project No.: OVUOFVZ200905)

The aim of this project is determine the physiological activity of Acetyl Choline Esterase (AChE) and detection of LD50 of inhibitors paraoxon, tabun, cyklosarine and reactivators AChE pralidoxim, obidoxim, trimedoxim, HI-6, methoxim. Next task is asses protective effectively of reactivators. Also detection of AChE activity in organs after intoxication with nerve compound and following reactivation. We will also follow up plasmatic concentration of reactivatos in plasma after i.m. administration and morphological changes in the tissues.

# NOTES – Surgical treatment of the digestive tube's penetrating injuries using Natural Orifice Transluminal Endoscopic Surgery

Klein, L., Dušek, T., Ferko, A., Lochman, P., Novotný, L., Páral, J., Šubrt, Z. Supported by the Czech Republic Ministry of Defence, 2009–2011 (Project No.: OVUOFVZ200903)

The project is focused on creating the non-devastating penetrating injury model of the digestive tube and testing the possibility for applification of the NOTES technology in the treatment. The method uses natural body's orifice (mouth, vagina, urethra, anus) for intraluminal instalation of the double channel operating endscope into the targeted digestive tube's organ. Through its wall it is put into the free abdominal cavity. Our hypothesis supposes using this method itself or in combination with laparoscopic technique for traumatic defect's closure in the wall without laparotomy. Project will be provided in the porcine model. Animals will be observed for

the period of two weeks, and after euthanasia they will be obducted for detection of postoperative complications.

# SUBSTANCE – Development of novel decontaminants and disinfectants of skin based on micellar compounds

Cabal, J., Kuča, K., Novotný, L., Kassa, J., Pohanka, M., Jun, D., Musílek, K. Supported by the Czech Republic Ministry of Defence, 2008–2011 (Project No.: OVUOFVZ200803)

The aim of this project is a development of new compound or mixture with a good decontaminant efficacy against wide spectrum of chemical warfare or pesticides. The second aim will be also to gain the universal disinfectant, which will be effective against many kinds of microbes.

# VISITORS TO THE FACULTY OF MILITARY HEALTH SCIENCES

#### Austria

 Dr STÜBIGER Gerald, Dr BELGACEM Omar (Vienna University of Technology) (Vienna) – talk on the scientific cooperation and lipid analysis with MALDI TOF/TOF device, 31 March 2009 – 02 April 2009

### Croatia

- SANTIC Marina (Rijeka) Discussion Forum 2009 Host-Pathogen Interaction, 28 April 2009 01 May 2009
- KATALINIĆ Maja, BEREND, Suzana B.Sc. (Institute for Medical Research and Occupational Health) (Zagreb) – short-term internship in laboratories of Centre of Advanced Studies and Deptartment of Toxicology, 01 February 2009 – 07 February 2009
- Dr. KOVARIK Z. (Zagreb) NATO Project Results discussion, 07 January 2009 – 07 January 2009

#### France

- VILLARD Hubert (Vichy) a French teacher, 01 October 2008 30 June 2009
- CHARBIT Alain (Paris) Discussion Forum 2009 Host-Pathogen Interaction, 28 April 2009 – 01 May 2009
- Dr JOSSE Denis (CRSSA) (Grenoble) the Fourth ORCHIDS Project Meeting, 10 November 2009 – 11 November 2009

## Germany

 ROESL Frank (Heidelberg) – Discussion Forum 2009 – Host-Pathogen Interaction, 28 April 2009 – 01 May 2009

#### India

COL NARAYANAN Pradeep , LTC JOSHI Vikas, LTC MAHAL I. J. S., TOMAR MAJ B. P. S , HASAN Javed, MANTRAVADI Manish, SINGH Ajay, ARUNACHALAM T., SINGH S. K. (Indian Army) – NBC Course, 12 October 2009 – 16 October 2009

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

#### Lithuania

 LT SEMJONOVA J. (Riga) – full-time study in general medicine with military medical specialization, 01 January 2009 – 30 June 2009

#### Sweden

Dr CASSELL Gudrun, Dr TUNELL Marianne (FOI, Sweden) (Umea)
 the Fourth ORCHIDS Project Meeting, 10 November 2009 – 11

November 2009

#### The Netherlands

 Dr VAN BAAR Ben L. M., KIEBOOM Jasper (TNO Rijswijk) (Rijswijk) – Project of European Defence Agency, Establishment and Management of a common database of B-agents, 04 February 2009 – 06 February 2009

## Turkey

 Assoc. Prof. YAREN Hakan, MD PhD. (Gulhane Military Medical Academy) (Ankara) – talks on the cooperation in the field of chemical protection of civilian and Armed Forces and mutual project discussion, 04 October 2009 – 10 October 2009

# **United Kingdom**

Dr AMLÔT Richard, Dr EDKINS Vicky, HILEY Mike (ERD, Health Protection Agency), Dr CHILCOTT Rob (CHaPD, Health Protection Agency), DEMPSEY Anne (CRCE, Health Protection Agency) (London) – the Fourth ORCHIDS Project Meeting, 10 November 2009 – 11 November 2009

#### **United States**

- LTC MARSHALI M. S., LTC BECK W., Capt. HILL H. W. (Texas Army Medical Forces) (Austin) – negotiations on mutual cooperation, 26 May 2009 – 28 May 2009
- Dr SMITH L., Dr WORSHAM P., Dr LANEY J., Dr BOWLING W., Dr HOWERTON S. (USAMRIID, DTRA) (Frederick) – bilateral negotiations on CBRN projects, 30 June 2009 – 02 July 2009

## VISITS ABROAD

## Argentina

- Chlíbek, R. (6th World Congress of the World Society for Pediatric Infectious Diseases, Buenos Aires, 16 November 2009 – 24 November 2009)
- Prymula, R. (6th World Congress of the World Society for Pediatric Infectious Diseases, Buenos Aires, 18 November 2009 – 22 November 2009)

#### **Australia**

- Ferko, A. (International Surgical Week, Adelaide, 03 September 2009 – 12 September 2009)
- Páral, J. (International Surgical Week, Adelaide, 03 September 2009 – 12 September 2009)
- Šubrt, Z. (International Surgical Week, Adelaide, 03 September 2009 – 12 September 2009)

## Austria

- Frank, M. (AO Course Pelvis and Acetabulum, Graz, 12 September 2009 – 16 September 2009)
- Lochman, P. (OMI Seminar "Surgery", Salzburg, 29 November 2009
   04 December 2009)
- Prymula, R. (Consensus on Pertussis Booster Vaccination in Europe, Vienna, 03 February 2009 – 03 February 2009)
- Prymula, R. (ISW-TBE Meeting, Vienna, 29 January 2009 30 January 2009)
- Žvák, I. (AO Course Master Course: Minimal Invasive Osteosynthesen, Innsbruck, 14 April 2009 – 18 April 2009)

# Belgium

- Hubálek, M. (Basic BioNumerics workshop, Sint-Martens-Latem, 30 November 2009 – 02 December 2009)
- Prymula, R. (Synflorix Global Advisory Board, Belgium, 23 April 2009 – 24 April 2009)
- Prymula, R. (Meeting ESWI, Bruselss, 20 July 2009 20 July 2009)
- Prymula, R. (27th Annual Meeting of the European Society for Paediatric Infectious Infectious Diseases, Bruselss, 09 June 2009 – 13 June 2009)

 Smetana, J. (NATO BioMedAC Meeting, Brussels, 02 November 2009 – 05 November 2009)

#### Canada

- Dresler, J. (HUPO VIII World Congress, Toronto, 26 September 2009 – 02 October 2009)
- Fučíková, A. (HUPO VIII World Congress, Toronto, 25 September 2009 – 02 October 2009)
- Härtlová, A. (HUPO VIII World Congress, Toronto, 26 September 2009 – 30 September 2009)
- Hubálek, M. (HUPO VIII World Congress, Toronto, 25 September 2009 – 02 October 2009)
- Link, M. (HUPO VIII World Congress, Toronto, 26 September 2009
   30 September 2009)

#### Croatia

- Bajgar, J. (10th International Meeting on Cholinesterases, Šibenik,
   22 September 2009 25 September 2009)
- Cabal, J. (10th International Meeting on Cholinesterases, Šibenik, 20 September 2009 – 25 September 2009)
- Kassa, J. (10th International Meeting on Cholinesterases, Šibenik, 20 September 2009 – 25 September 2009)
- Kuča, K. (CBMTS Industry VI and 5th World Congress CBRN & Terrorism, Dubrovnik, 05 April 2009 – 10 April 2009)
- Musílek, K. (5th World Congress on Chemical, Biological and Radiological Terrorism, Cavtat, 05 April 2009 – 10 April 2009)
- Musílek, K. (10th International Meeting on Cholinesterases, Šibenik,
   20 September 2009 25 September 2009)
- Novotný, L. (10th International Meeting on Cholinesterases, Šibenik, 20 September 2009 – 25 September 2009)
- Pohanka, M. (10th International meeting on cholinesterases, Shibenik, 20 September 2009 – 25 September 2009)
- Prymula, R. (Central European Vaccine Advisory Groups (CEVAG), Dubrovnik, 28 May 2009 – 30 May 2009)
- Strašková, A. (Guest researcher in Medical Faculty University of Rijeka, University of Rijeka, 22 June 2009 – 23 July 2009)
- Strašková, A. (REECOOP HST Consortium: 2nd Bridges in Life Sciences Annual Scientific Review, Zagreb, 03 October 2008 – 06 October 2009)

- Žďárová Karasová, J. (Health and Occupational Health, Zagreb, 17 May 2009 – 23 May 2009)
- Žďárová Karasová, J. (10th International Meeting on Cholinesterases, Šibenik, 20 September 2009 – 25 September 2009)

### **Finland**

- Lochman, P. (EWMA 2009 HELP in Helsinki, Helsinki, 19 May 2009 – 22 May 2009)
- Pohanka, M. (7th symposium on CBRNE Threats, Jyväskylä, 08 June 2009 – 11 June 2009)
- Prymula, R. (19th European Congress of Clinical Microbiology and Infectious Diseases, Helsinki, 18 May 2009 – 19 May 2009)
- Prymula, R. (European Paediatric Pneumococcal Advisory Board Meeting, Helsinki, 14 May 2009 – 15 May 2009)
- Smetana, J. (19th European Congress of Clinical Microbiology and Infectious Diseases, Helsinki, 15 May 2009 – 19 May 2009)

### **France**

- Cabal, J. (Project meeting EU/PHEA ORCHIDS, Grenoble, 29 June 2009 – 03 July 2009)
- Kuča, K. (ORCHIDS Project Stakeholders Workshop, Grenoble, 29 June 2009 – 03 July 2009)
- Novotný, L. (Third Project Meeting and Stakehokder Workshop, Grenoble, 01 July 2009 – 02 July 2009)
- Prymula, R. (The Third International Conference on Influenza Vaccines for the World, Cannes, 26 April 2009 – 30 April 2009)

# Georgia

 Páral, J. (13th Annual Conference – European Society of Surgery, Tbilisi, 24 November 2009 – 28 November 2009)

# Germany

- Bajgar, J. (12th Medical Chemical Defense Conference, Munich, 22 April 2009 – 24 April 2009)
- Balonová, L. (6th International Conference on Tularemia, Berlin, 12 September 2009 – 17 September 2009)
- Červený, L. (Medical Biodefense Conference, Munich, 20 October 2009 – 22 October 2009)

- Dresler, J. (Medical Biodefense Conference, Munich, 20 October 2009 – 22 October 2009)
- Fajfrová, J. (Falk Workshop Immunology and Liver Disease, Hannover, 15 October 2009 – 16 October 2009)
- Fajfrová, J. (Falk Symposium 171 Liver and Metabolic Syndrome, Hannover, 17 October 2009 – 18 October 2009)
- Fučíková, A. (6th International Conference on Tularaemia, Berlin, 13 September 2009 – 16 September 2009)
- Haman, L. (Europace 2009, Berlin, 20 June 2009 24 June 2009)
- Härtlová, A. (6th International Conference on Tularaemia, Berlin, 13 September 2009 – 16 September 2009)
- Hernychová, L. (6th International Conference on Tularemia, Berlin, 13 September 2009 – 16 December 2009)
- Horáček, J. (14th Congress of the European Hematology Association (EHA), Berlin, 03 June 2009 – 07 June 2009)
- Hubálek, M. (6th International Conference on Tularemia, Berlin, 13 September 2009 – 16 September 2009)
- Hubálek, M. (Meeting of EDA Project, Munich, 19 October 2009 20 October 2009)
- Hubálek, M. (Medical Biodefense Conference, Munich, 21 October 2009 – 23 October 2009)
- Jebavý, L. (14th Congress of EHA, Berlin, 04 June 2009 07 June 2009)
- Kassa, J. (12th Medical Chemical Defense Conference, Munich, 22 April 2009 – 24 April 2009)
- Klimentová, J. (6th International Conference on Tularemia, Berlin, 13 September 2009 – 16 September 2009)
- Kubelková, K. (Course for BSL3 Laboratory Work, Gottingen, 25 May 2009 – 29 May 2009)
- Kubelková, K. (6th International Conference on Tularemia, Berlin,
   13 September 2009 16 September 2009)
- Kubelková, K. (PEGS Europe 2009 Protein Engineering Summit, Hannover, 06 October 2009 – 10 October 2009)
- Musílek, K. (12th Medical Chemical Defence Conference, Munich, 22 April 2009 – 23 April 2009)
- Musílek, K. (46th Congress of European Societies of Toxicology, Dresden, 13 September 2009 – 16 September 2009)
- Novotný, L. (46th Congress of the European Societies of Toxicology, Dresden, 13 September 2009 – 16 September 2009)

- Páral, J. (Major Incident Medical Management and Support (MIMMS) Course, Oberammergau, 27 April 2009 – 01 May 2009)
- Pávková, I. (6th International Conference on Tularemia, Berlin, 13 September 2009 – 16 September 2009)
- Pohanka, M. (12th Medical Chemical Defense Conference, Munich, 22 April 2009 – 23 April 2009)
- Strašková, A. (6th International Conference on Tularemia, Berlin, 13 September 2009 – 16 September 2009)
- Šmejkal, K. (Videosymposium 2009, Hannover, 11 March 2009 14 March 2009)
- Špidlová, P. (BLS3 Training Course, Göttingen, 25 May 2009 29 May 2009)
- Špidlová, P. (6th International Conference on Tularemia, Berlin, 13 September 2009 – 16 September 2009)
- Zárybnická, L. (The 2nd European Congress of Immunology, Berlin, 12 September 2009 – 16 September 2009)
- Žďárová Karasová, J. (EUROTOX 2009, Dresden, 13 September 2009 – 13 September 2009)
- Žďárová Karasová, J. (12th Medical Chemical Defence Conference, Munich, 22 April 2009 – 23 April 2009)
- Žvák, I. (Videosymposium 2009, Hannover, 11 March 2009 14 March 2009)

#### Greece

• Šubrt, Z. (8th Congress of the European Hepato-Pancreato-Biliary Association, Athens, 17 June 2009 – 20 June 2009)

## Hungary

- Dresler, J. (3rd Central and Eastern European Proteomic Conference, Budapest, 06 October 2009 – 10 October 2009)
- Fibír, A. (Advanced European Course on Hand Surgery, Hajdúszoboszló, 04 September 2009 – 08 September 2009)
- Fučíková, A. (3td Central and Eastern European Proteomics Conference, Budapest, 06 October 2009 – 09 October 2009)
- Hernychová, L. (3rd Central and Eastern European Proteomics Conference, Budapest, 06 October 2009 – 09 October 2009)
- Kročová, Z. (Aquired Lecture on the International Conference, Balatonöszöd, 02 September 2009 – 06 September 2009)
- Prymula, R. (Regional Networking Meeting, Debrecén, 03 April 2009 – 06 April 2009)

- Smetana, J. (Communicable Diseases Control System, Czech Republic, ECDC Training Course on Technical Aspects of Outbreak Investigation, Debrecen, 08 June 2009 – 12 June 2009)
- Smetana, J. (ECDC Training Course on Technical Aspects of Outbreak Investigation, Debrecen, 08 June 2009 – 12 June 2009)
- Strašková, A. (Bridges in Life Sciences US-CEE Regional Networking Meeting, Debrecen, 03 April 2009 – 06 April 2009)
- Střítecká, H. (2nd Central European Congress on Obesity, Budapest, 01 October 2009 – 03 October 2009)
- Žďárová Karasová, J. (Bridges in Life Sciences, Debrecen, 04 April 2009 – 06 April 2009)

### China

 Klein, L. (7th International Conference on Humanitarian Medicine, Guangzhou, 23 November 2009 – 27 November 2009)

#### India

 Lochman, P. (F.MAS (Fellowship in Minimal Access Surgery), New Delhi, 30 October 2009 – 16 November 2009)

#### Israel

- Klein, L. (Best Way of Training for Mass Casualty Situations, Haifa, 14 November 2009 – 19 November 2009)
- Páral, J. (World Congress for the Advancement of Surgery, Jerusalem, 31 October 2009 – 05 November 2009)

## Italy

- Dobeš, D. (19th Meeting of the Mediterranean League of Angiology and Vascular Surgery (MLAVS), Palermo, 23 October 2009 – 28 October 2009)
- Haman, L. (8th Atrial Fibrillation Symposium, Roma, 11 March 2009
   13 March 2009)
- Klein, L. (Executive Commettee Meeting IAHM Brock Chisholm, Palermo, 01 April 2009 – 03 April 2009)
- Smetana, J. (Tropical Medicine Conference, Verona, 07 September 2009 – 10 September 2009)

### Lithuania

 Prymula, R. (News Trends in Vaccination against Pneumococcal Diseases, Vilnius, 03 June 2009 – 05 June 2009)

## Norway

 Dobeš, D. (23rd ESVS Annual Meeting of the European Society for Vascular Surgery, Oslo, 02 September 2009 – 07 September 2009)

## **Philippines**

 Prymula, R. (Asian Launch Symposium, Manila, 05 August 2009 – 05 August 2009)

#### Poland

- Dresler, J. (Sample Preparation from Clinical Isolates of Francisella tularensis and Vibrio cholerae, Pulawy, 22 November 2009 – 01 December 2009)
- Hubálek, M. (Meeting of EDA Project, Pulawy, 22 April 2009 23 April 2009)
- Lochman, P. (8th International Gastric Cancer Congress, Krakow, 10 June 2009 – 13 June 2009)
- Prymula, R. (16th Meeting ECDC management Board, Varsaw, 24 June 2009 – 25 June 2009)

## Portugal

- Boštík, P. (1st MAV Project Meeting, Coimbra, 30 October 2009 01 November 2009)
- Lochman, P. (YES meeting (Young European Scientist Meeting, Porto, 24 September 2009 – 27 September 2009)

# Republic of Korea

- Kuča, K. (Annual Meeting of Pharmaceutical Society of Korea, Daejeon, 25 October 2009 – 31 October 2009)
- Musílek, K. (104th National Meeting of the Korean Chemical Society, Daejeon, 28 October 2009 – 30 October 2009)
- Pohanka, M. (104th National Meeting of the Korean Chemical Society, Deajeon, 28 October 2009 – 30 October 2009)

### Romania

 Bajgar, J. (10th International Congress of Clinical Pharmacology, Therapeutics and Clinical Toxicology, Sinaia, 09 June 2009 – 12 June 2009)

#### **Russian Federation**

 Prymula, R. (4th Europediatrics 2009, Moscow, 02 July 2009 – 06 July 2009)

#### Serbia

- Balonová, L. (7th Management Committee and WG1, WG2, WG3, WG4 and WG5 meetings of COST Action B28 Array Technologies for BSL3 and BSL4 Pathogens, Belegrade, 21 April 2009 – 24 April 2009)
- Červený, L. (COST B28 Meeting, Belgrade, 22 April 2009 24 February 2009)
- Halajčuk, T. (Medical Manager, Multi National Task Force Center, KFOR, Lipljan, 10 July 2008 – 20 January 2009)
- Härtlová, A. (Quantitative proteomic analysis of detergent-resistant membranes from macrophages upon Francisella tularensis early infection, Belgrade, 22 April 2009 – 24 April 2009)
- Husárová, M. (KFOR, Podujevo, 31 July 2008 20 January 2009)

# Singapore

- Kassa, J. (6th Singapore International Symposium on Protection against Toxic Substances (6th SISPAT) and 2nd International Chemical, Biological, Radiological & Explosives Operations Conference (2nd ICOC), Singapore, 06 December 2009 – 12 December 2009)
- Kuča, K. (6th Singapore International Symposium on Protection against Toxic Substances (6th SISPAT) and 2nd International Chemical, Biological, Radiological & Explosives Operations Conference (2nd ICOC), Singapore, 06 December 2009 – 12 December 2009)

## Slovakia

- Chlíbek, R. (7th Slovak Pediatric Conference, Martin, 26 November 2009 – 27 November 2009)
- Lochman, P. (1st International Student Medical Congress Košice (ISMCK), Košice, 22 June 2009 – 26 June 2009)

- Pavlík, V. (Education of Students, Košice, 01 December 2009 03 December 2009)
- Prymula, R. (Workshop tick borne encefalitis, Bratislava, 24 March 2009 – 26 March 2009)
- Střítecká, H. (Food and Function 2009, Žilina, 09 June 2009 11 June 2009)

#### Slovenia

 Prymula, R. (Pneumococcal New Conjugate Vaccines Workshop, Ljubljana, 05 May 2009 – 06 May 2009)

## Spain

- Bednarčík, P. (Application of Lowfrequency Pulse Magnetic Field in Rehabilitation, Barcelona, 29 September 2009 – 29 September 2009)
- Bednarčík, P. (Physiological Changes of Organism after Exposition to Low-Frequency Electromagnetic Field and Its Application in Therapy of Locomotive System Disorders, Barcelona, 29 September 2009 – 29 September 2009)
- Urbánek, L. (22th Congress of the European Society for Surgery of the Shoulder and the Elbow, Madrid, 16 September 2009 – 19 September 2009)
- Vávrová, J. (ESF-EMBO Symposium Spatio-Temporal Radiation Biology: Transdisciplinary Advances for Biomedical Aapplications, Sant Feliu de Guixols, 16 May 2009 – 21 May 2009)
- Zárybnická, L. (ESF-EMBO Symposium Spatio-Temporal Radiation Biology: Transdisciplinary Advances for Biomedical Aapplications, Sant Felio de Guixols, 16 May 2009 – 21 May 2009)

#### Sweden

 Strašková, A. (Symposium on Bacterial Cell Biology and Pathogenesis and Workshop on Microscopy in Microbial Systems, Umea University, 14 June 2009 – 18 June 2009)

#### Switzerland

- Frank, M. (AOTrauma Course Polytrauma, Davos, 04 December 2009 – 08 December 2009)
- Fučíková, A. (Scientific Intership in Order to Get Knowledges about a New Pproteomic Techniques Available for Biomarker Discovery, Zurich, 02 November 2009 – 19 November 2009)

- Klein, L. (13th European Burns Association Congress, Lausanne, 02 September 2009 – 05 September 2009)
- Kočí, J. (AOTrauma Course Polytrauma, Davos, 04 December 2009 – 08 December 2009)
- Šmejkal, K. (AOTrauma Course Polytrauma, Davos, 04 December 2009 – 08 December 2009)
- Trlica, J. (AOTrauma Course Polytrauma, Davos, 04 December 2009 – 08 December 2009)

### The Netherlands

 Střítecká, H. (17th European Congress on Obesity, Amsterdam, 06 May 2009 – 09 May 2009)

## Turkey

- Chlíbek, R. (Meeting Central Vaccination Advisory Group, Istanbul, 22 October 2009 – 24 October 2009)
- Šmejkal, K. (European Congress of Trauma and Emergency Surgery, Antalya, 13 May 2009 – 17 May 2009)
- Žvák, I. (European Congress of Trauma and Emergency Surgery, Antalya, 13 May 2009 – 17 May 2009)

## United Kingdom

- Dobeš, D. (Vascular Society Annual Meeting 2009, Liverpool, 16 November 2009 – 20 November 2009)
- Horáček, J. (13.ESH-EBMT Training Course-Blood and Marrow Transplantation, London, 25 May 2009 – 29 May 2009)
- Kuča, K. (Project ORCHIDS Workshop, London, 21 January 2009 22 January 2009)
- Prymula, R. (Bilateral Negotiation on CBRN, London, 11 March 2009 – 12 March 2009)

#### **United States**

- Bajgar, J. (Chemical and Biological Defense Science and Technology Conference, Dallas, 16 November 2009 – 20 November 2009)
- Balonová, L. (Glycoproteomic Course at University of Georgia, Athens, Georgia, 03 August 2009 – 07 August 2009)
- Balonová, L. (Participation in the Project "Analysis of Gglycoproteins Isolated from Pathogenic Bacterium Francisella tularensis, Bloomington, Indiana, 01 July 2009 – 02 August 2009)

- Boštík, P. (Innate Imunity in AIDS Discussion Forum, Atlanta, 28 November 2009 – 08 December 2009)
- Boštíková, V. (Research Cooperation between DE and MMRHVLB/CCID/CDC, Atlanta, Georgia, 01 September 2009 – 30 September 2009)
- Boštíková, V. (Symposium New Aspects of Herpetic Viruses Infectious Diseases, Atlanta, Georgia, 11 September 2009 – 11 September 2009)
- Hlúbik, P. (15th International Symposium on Atherosclerosis, Boston, 13 June 2009 – 19 June 2009)
- Horáček, J. (51st Annual Meeting of American Society of Hematology (ASH), New Orleans, LA, 03 December 2009 – 10 December 2009)
- Hubálek, M. (NATO HFM-177 RTG Kick-off Meeting to the project, Edgewood, MA, 05 April 2009 – 09 April 2009)
- Kassa, J. (Chemical and Biological Defense Science and Technology Conference, Dalllas, 16 November 2009 – 20 November 2009)
- Kuča, K. (Chemical and Biological Defense Physical Science and Technology Conference, Dallas, 16 November 2009 – 21 November 2009)
- Musílek, K. (Chemical and Biological Defense Science and Technology Conference 2009, Dallas, 16 November 2009 – 20 November 2009)
- Musílek, K. (328th American Chemical Society National Meeting, Washington D.C., 16 August 2009 – 20 August 2009)
- Pohanka, M. (Chemical and Biological Defense Science and Technology conference, Dallas, 16 November 2009 – 20 November 2009)
- Prymula, R. (49th ICCAC, San Francisco, 11 September 2009 16 September 2009)
- Prymula, R. (Advisory Board Agreement for Global Adult Vaccines, New York, 06 May 2009 – 09 May 2009)
- Prymula, R. (Ilinois Public Health Emergensy Preparedness Summit, Chicago, 13 July 2009 – 16 July 2009)
- Řehulka, P. (Analysis of Phosphoproteome in Pathogenic Bacterium Francisella tularensis, Bloomington, Indiana, 12 October 2009 – 20 November 2009)
- Střítecká, H. (15th International Symposium on Atherosclerosis, Boston, 13 June 2009 – 19 June 2009)

### VISITS ABROAD

- Šinkorová, Z. (Cold Spring Harbor Laboratory Presentation of Results, New York, 06 October 2009 – 10 October 2009)
- Špidlová, P. (Research Work at the Indiana University, Bloomington, Bloomington, 25 October 2009 – 07 November 2009)
- Vaněk, J. (IEEE Visualization 2009, Atlantic City, NJ, 10 October 2009 – 18 October 2009)
- Zárybnická, L. (The Cell Death, Cold Spring Harbor, 06 October 2009 – 10 October 2009)
- Žďárová Karasová, J. (Chemical and Biological Defense Science and Technology Conference, Dallas, 16 November 2009 – 20 November 2009)

## **OBITUARIES**

## In Memory of Civilian Employee Jaroslav Kuchař

He died on 31 January 2009 at the age of 60. He worked at the Services, recently at the Faculty of Pharmacy of Charles University in Hradec Králové.

## In Memory of MG (ret.) Prof. Jaroslav Vaňásek, M.D., Ph.D.

He was born on August 18, 1927 in Dolní Újezd and died in Hradec Králové on 2 February 2009.

Jaroslav Vaňásek came from the headmaster's family from Dolní Újezd in the district of Svitavy. After finishing basic school in his native village he began to study at the Secondary Grammar School in Litomyšl. His studies were affected by the war. As a displaced person he worked as an unskilled worker from September 1944 to May 1945.

After passing the school-leaving exam he started to study at the Faculty of Medicine at Charles University in Prague in September 1946. In 1949 he decided to make a change. He entered the Military Medical Academy in Brno. He graduated from the Academy and on June 15, 1951 he became a professional medical officer in the rank of captain.

First he worked as a junior doctor at the Department of Surgery at the Garrison Hospital in Brno. In September 1951 he came to the newly established Military Medical Academy in Hradec Králové. He became a member of the Department of Medical Service Organization and Tactics. In 1952 staff captain MUDr. Vaňásek was assigned to the post of the senior lecturer of the department.

During the following year he studied at the Command Faculty at the Military Medical Academy in Leningrad. After coming back to Hradec Králové he became a chief of group Medical Service in War". He passed his specialization in Medical Service Organization and Tactics.

Then he worked at the Ministry of National Defence – General Staff for two years, where he was a chief of group of the department of medical protection against mass destruction weapons. In November 1957 LTC MUDr. Jaroslav Vaňásek returned to the Purkyne Military Medical Academy in Hradec Králové. He was on position of the deputy-head at the Department of Medical Service Organization and Tactics.

In 1958 the Purkyne Military Medical Academy was dissolved and the Purkyne Military Medical Research and Postgraduate Institute was

established. In October 1959 MUDr. Vaňásek became the head of the Department of Medical Service Organization and Tactics. On September 23, 1960 he started to work as a lecturer at the Department of Field Internal Medicine and Radiology at that time. In 1961 he received the specialization of the first degree in Internal Medicine and in a short time he started the research in specialization in the Field Internal Medicine. In 1966 he defended the doctoral thesis and he worked as a lecturer at the Department of Internal Medicine with sport medicine, whose head was COL Prof. MUDr. Jurkovič, DrSc.

In relieving political atmosphere in the 1960s new opportunities appeared in Czechoslovakia and in the Czech Army as well. LTC MUDr. Jaroslav Vaňásek, CSc. was given a possibility to take part in study stays abroad. He participated in a scholarship in France – not only at the Haematology Institute at the Faculty of Medicine in Strasbourg but also at the Laboratory for Medical Biology and Industrial Chemistry in Mulhouse.

After coming back he was promoted to the rank of colonel and then he was assigned to the post of the chief of the Purkyne Military Medical Research and Postgraduate Institute in Hradec Králové in 1971. Then he passed the specialization of the second degree and he received a degree of associate professor in the Field Internal Medicine on August 31, 1971, After eight-month temporary leadership of the Institute he was appointed the commander of the Purkyne Military Medical Research and Postgraduate Institute on January 25, 1971officially. He was at the head of the Institute, which was the base of education and research work of the Czechoslovak military medical service for the following 17 years. The Institute was concerned with research field: participation of the Institute specialists in international specialized professional authorities, development of contacts with national and foreign specialized workplaces, and very good quality of congresses and scientific assemblies, outstanding intensity and results in the field of students research and professional activities, including their international events, educational activity and all-around training of military medical professionals, innovatory and inventor movement focused on military medical field. He was connected with the additional building of the 2nd Internal Clinic in Pospíšilova Street, with problems of marrow inhibition treatment – unit Life Island (together with Prof. Bláha).

After giving up the active military duty in January 1988 he was further involved as a specialist in haematology branch. He was also involved in Military Insurance Company. He was very active until he got seriously ill.

His name is inseparably connected with the history of military medical education and with the town of Hradec Králové. He belonged to the generation which founced military medical education in Hradec Králové and he was one of its remarkable personalities.

## In Memory of COL (ret.) Prof. Hvězdoslav Stefan, M.D., Ph.D.

He was born on 14 March 1920 in Hradec Králové and died on 7 February 2009 in Hradec Králové.

He comes from a patriotic family, his father, Libor Stefan, M.D., was a General of the Medical Corps of the Czechoslovak Army. All his three sons remained loyal to democratic principles of the first Czechoslovak Republic and engaged in antifascist resistance movement.

Hvězdoslav Stefan started to participate in resistance activities as a grammar school student. After occupation of Bohemia and Moravia he was active in the organization Defence of the Nation, he distributed and hid weapons left by the Czechoslovak Army. In 1941 he tried to get to Czechoslovak foreign units, but he was seized on the German-Swiss border and held prisoner in the pre-trial custody in Feldkirch for a year. In June 1942 he was sentenced by the People's Court in Nürnberg to penitentiary for high treason for 15 years. He was imprisoned in Bayreuth.

In 1949 after the war he graduated from the Medical Faculty and worked shortly at the Department of Surgery and ENT at the hospital in Kolín. In 1952 he got a job at the Surgical Clinic of the then Military Medical Academy in Hradec Králové. He was commissioned and worked as an officer of the Military Medical Service till 1958, when the Purkyně Military Medical Academy was dissolved. At that time he was a frequent and erudite contributor of the Military Medical Journal.

Hvězdoslav Stefan was the youngest student of the well-known Prof. Jan Bedrna. Under his leadership he got familiar with the most problems of surgery and urology, in which he achieved later big successes. He was also interested in paediatric surgery and in 1960 he became a registrar and later a head surgeon of the newly established Department of Paediatric Surgery at the University Hospital in Hradec Králové. In 1969 he habilitated in the branch Surgery and due to political situation and conditions at that time he could be appointed to professorship of Charles University after 1989.

Due to his professional background, operating technique and even managerial skill the Department of Paediatric Surgery got independent in 1982. This workplace under his leadership achieved an excellent level which was appreciated not only at home, but also abroad. He was the head of the operating team which performed a separation of East Bohemia Siamese twins at the University Hospital in Hradec Králové in 1980. It was one of his greatest successes.

As an expert in his branch he was honored by a number of medical associations: a honorary member of the Czech Medical Association of J. E. Purkyně, a honorary member of the Association of Paediatric Surgeons (Czech and Polish), a honorary member of the Association of Urology, an elected member of the British Association of Paediatric Surgeons (BAPS).

His publication activities amount to more than 150 titles. He was also interested in history of medicine and published in this field more than 30 pieces of work. One of his most famous publications is a detailed study about a famous medical expert from the 19th century Karel Rokitanský, a native of Hradec Králové.

Prof. Hvězdoslav Stefan, M.D., Ph.D., was a world-famous expert in the branches of urology and paediatric surgery, emeritus professor of the Medical Faculty of Charles University in Hradec Králové and a remarkable personality of public life in Hradec Králové.

## In Memory of COL (ret.) Assoc. Prof. Ivan Hruška, Ph.D.

He was born on 23 November 1947 in Plzeň and died on 9 February 2009 in Lubno, district Hradec Králové.

After finishing his compulsory school attendance in Česká Lípa in 1962 he started his lifelong career in the military. He attended Jan Žižka Military High School in Moravská Třebová where he passed his school-leaving examination in 1965. He continued his professional training at the Artillery Academy in Martin, his field of study was Command of Field Artillery. He graduated in 1968 with the rank Second Lieutenant and started his active service at the 361st Artillery Regiment in Turnov.

He tended to social sciences. From 1972–1976 he studied at the Military Political Academy in Bratislava and after the graduation he started there his research assistantship in the branch Philosophy. After the defence of his Ph.D. thesis in November 1979 he began to work at the Department of Marxism and Leninism at the Purkyně Military Medical Research and Postgraduate Institute, which provided teaching concerning social sciences at that time. In 1988 he was appointed an Associate Professor.

After the revolution in November 1989 he became a head of this department which had to change fundamentally curriculum and methods of teaching. The department was renamed the Department of Social Sciences. In 1993 he retired at own request. After that he worked at a computer firm, but also taught Philosophy at the University of Hradec Králové.

He passed away tragically.

## In Memory of COL (ret.) Prof. Albín Žák, M.D., Ph.D.

He was born on 29 November 1935 in Rožňava (the Slovak Republic) and died on 22 February 2009 in Hradec Králové.

He moved with his family to Bratislava where he during the war from 1941 to 1945 attended the basic school. In 1945 he started to attend the grammar school in Bratislava and after the school-leaving examination in 1953 he continued his studies at the Military Medical Academy in Hradec Králové. He graduated in 1959 and became an officer of the Medical Service with the rank First-Lieutenant. In the following two years he completed a post-graduate training at the Garrison Hospital in Bratislava.

In 1961 he was appointed a registrar at the 5th Infantry Regiment in Mikulov. In 1963 he completed an Advanced Officer Course for doctors-organizers and after that in 1964 he became a Commander of the 13th Medical Battalion in Kroměříž.

Due to his professional specialization he returned to the Military Medical Academy as a lecturer in 1966 and in 1967 he became a senior lecturer at the Department of Military Medical Service Organization and Tactics. In 1976 he achieved the Ph.D. degree and in 1981 he was appointed an Associate Professor in the branch Health Service.

In 1985–1990 he represented the department acting as a deputy chief and in March 1989 he was appointed to professorship in the branch Social Medicine and Medical Service Organization. After the November revolution in 1989 he worked as a Deputy Commander at the Purkyně Military Medical Academy for a year. After that he got a post as a head of his department where he lectured till 1992. At the end of the year 1995 he retired, but henceforth worked as a civilian employee at the academy.

In his scientific and publication activities he focused especially on textbooks in which he summed up all his experience concerning organization and activities of the Military Medical Service.

# In Memory of Civilian Employee Hana Šidlikovská

She died on 22 March 2009 at the age of 64. She worked at the Department of Economics.

## In Memory of COL (ret.) Prof. Milan Dostál, M.D., Ph.D.

He was born on 13 September 1925 in Pardubice and died on 25 March 2009 in Hradec Králové.

He comes from the family of an officer of the Czechoslovak Army, consequently he had to change his place of residence and school attendance very frequently. He started his compulsory school attendance in Olomouc - Nové Hodolany in 1931-1936, then he continued his studies at grammar school in Olomouc. Vvškov and in the end in Pardubice where he passed his school-leaving examination in 1943. During the war he worked as a laborer at the firm Explosia in Semtín. His patriotism led him to illegal resistance movement, but unfortunately it was revealed. In June 1944 Milan Dostál had to hide out from Gestapo, he even crossed the border to get to the Slovak Republic. There he was seized and sent back to the protectorate. In October 1944 Gestapo sent him to the stockade in Dresden. He was accused of high treason but the action in court did not take place because of bombing the town of Dresden by the Allied Army Air Corps. But his suffering continued in prisons in Leipzig. Meissen and Pirna, and he also survived the death march to Bad Schandau. This prison was in the end liberated by the Red Army. At the end of May he returned to Bohemia, but till the end of September he healed of overcome hardship and aftereffects of toxic dysentery.

In October 1945, as a military bursar, he began to attend lectures of the first study year at the reestablished Medical Faculty of Charles University in Prague. Then he continued his studies at the Military Medical Academy (MUC) which was established in Brno in 1949. He was one of the few who succeeded in finishing his studies in Brno. He graduated from the Medical Faculty of Masaryk University on 19 April 1951.

Milan Dostál, M.D., became an officer of Military Medical Service with the rank First-Lieutenant. He was sent to post-graduate training to the Central Military Hospital. In April 1952 he became a lecturer of the Institute of Pharmacology at the Military Medical Academy in Hradec Králové. He focused on analyzing changes of the centrally damping effects of analgesics in acute radiation disease and in co-operation with his other colleagues he published several textbooks.

In 1958 he got a post as a senior lecturer in the Group of Radiology at the Department of Field Internal Medicine and Radiology and Sports Medicine at the established Purkyně Military Medical Research and Postgraduate Institute (PMMRPI). This workplace achieved independence under the leadership of Assoc. Prof. J. Mráz, M.D., in 1963. LTC Milan Dostál, M.D., focused on radioprotection. In February 1968 he took scientific degree of Ph.D. and got a position as Associate Professor at the Department of Radiology (officially he achieved this degree in 1977). After the death of Prof.

J. Mráz in 1975, he became the Chief of the Department of Radiobiology and simultaneously the main expert of the Medical Service in the branch Military Radiobiology. On 28 March 1984 he was appointed to professorship in the branch Biophysics. In 1985 he left active military service and retired.

All the time he worked on and led an important research program in the field of protection against effects of ionizing radiation of nuclear weapons in war. He aimed the research of the department at both protection against radiation effects, and effective complex treatment of irradiation damage. During the period of danger of using neutron weapons he created an extensive interdepartmental research program in co-operation with all important physical, biophysical and radiobiological centers in then republic and carried out a lot of experimental studies at the Nuclear Research Institute in Řež. The Department of Radiobiology under his leadership participated in training of medical personnel of nuclear power plants in Jaslovské Bohunice and Dukovany. He was one of the most respected consultant in this field.

Thanks to him a specialized centre for treatment of severe medullary decrement of haematogenesis was established in Hradec Králové in the 70s.

Besides intensive research work, he focused on educational activities of the department.

He was the author of a two-piece textbook Military Radiobiology, which was published in 1975. His publication activities amount to 150 titles.

He achieved a number of appreciations of his devoted work. In 1980 he was awarded a medal of the Czech Medical Association for his active contribution to activities of the then Czech Society for Nuclear Medicine and Radiation Hygiene. In October 2000 he was appointed a honorary member by the presidium of the Czech Medical Association of J.E.Purkyně. He belongs doubtless to outstanding personalities of the military health care education in Hradec Králové

(The author of these obituarities: doc. PhDr. František Dohnal, Ph.D., CSc.)

# **COURSES AT THE FACULTY IN 2009**

## Military Hygiene

- Relaxation a litle another way, 24 February 2009 24 February 2009, 15 April 2009 – 15 April 2009
- Refresher course prevention of burn out syndrom, 09 February 2009 – 11 February 2009
- Refresher course teachings about foodstaf, 20 April 2009 22 April 2009, 18 November 2009 – 20 November 2009
- Refresher course hygienic support to missions, 23 March 2009 –
   26 March 2009. 15 June 2009 19 June 2009

## **Language Courses**

- Intensive language course English (STANAG 2), 19 January 2009
   29 May 2009, 07 September 2009 22 January 2010
- Refresher language courses English (STANAG 2), 23 March 2009
   07 May 2009, 26 October 2009 04 December 2009
- Combined language courses English (STANAG 3), 15 September 2008 – 05 June 2009, 14 September 2009 – 04 June 2010
- Medical English conversation course, 12 January 2009 23 January 2009
- Combined language courses French (STANAG 2), 15 September 2008 – 12 June 2009
- Combined language courses French (STANAG 1), 12 September 2009 – 11 June 2010
- Combined language courses English (STANAG 2), 08 September 2008 – 11 June 2009, 07 September 2009 – 03 June 2010

## **Military Medical Service Organization**

- Refresher course of aeromedical evacuation, 14 April 2009 16
   April 2009, 29 September 2009 01 October 2009
- Specialized warrent officer's course for nurses, 30 March 2009 19
   June 2009, 29 September 2009 18 December 2009

## Military Epidemiology

 Refresher course – basis in tropical and travel medicine focused on Afrika, 23 March 2009 – 24 April 2010, 30 March 2009 – 01 April 2009

- Refresher course basis in tropical and travel medicine for doctors. 19 October 2009 – 22 October 2009
- Refresher course basis in tropical and travel medicine for NIZP,
   02 November 2009 04 November 2009

### **General Medicine**

- Refresher coourse transportation of casualties in the field, 08 June 2009 – 11 June 2009, 07 September 2009 – 10 September 2009
- Basic course in first aid in the field, 19 November 2009 23
   December 2009, 05 November 2009 09 December 2009, 23
   February 2009 27 December 2009, 20 April 2009 24 December 2009, 11 May 2009 15 May 2009, 09 November 2009 13
   November 2009, 30 November 2009 04 December 2009
- Refresher course repetitory of extended first aid in field conditions, 02 November 2009 – 06 November 2009, 18 May 2009 – 29 May 2009
- Basic course in first aid, 23 March 2009 24 March 2009, 30 March 2009 – 01 April 2009
- Refresher course defibrilators and their operation, 04 June 2009 –
   04 June 2009, 16 April 2009 16 April 2009, 01 October 2009 01
   October 2009
- Refresher course BATLS/BARTS, 16 February 2009 18 February 2009, 06 April 2009 08 April 2009, 01 June 2009 03 June 2009, 07 December 2009 09 December 2009, 14 December 2009 19 December 2009
- Innovative course battlefield advanced trauma life support R-BATLS/BARTS, 09 March 2009 11 March 2009, 21 September 2009 23 September 2009
- Basic course BARTS for CLS extended first aid, 05 January 2009 23 January 2009, 26 January 2009 13 February 2009, 16 March 2009 03 April 2009, 14 April 2009 30 April 2009, 15 June 2009 03 July 2009, 05 October 2009 23 October 2009, 09 November 2009 27 November 2009

## **Molecular Pathology**

 Refresher course – biosensors for detection of biological and chemical agents, 16 February 2009 – 16 February 2009

## **Multidisciplinary Studies**

 Basic course – MS WINDOWS XP and MS WORD XP, 12 January 2009 – 16 January 2009, 08 June 2009 – 12 June 2009

### **COURSES AT THE FACULTY IN 2009**

- Refresher course Psychology and crisis intervention, patient management, 16 March 2009 – 18 March 2009, 19 October 2009 – 21 October 2009
- Preparatory course for entrance examination, 01 June 2009 06 June 2009
- Refresher course in MS WINDOWS XP and MS WORD XP, 15 April 2009 – 17 April 2009, 19 October 2009 – 21 October 2009
- Basic course of GP's information technology, 11 May 2009 15
   May 2009, 23 November 2009 27 November 2009
- Refresher course psychosocial aspects of disaster and crises management, 18 May 2009 – 22 May 2009
- Refresher course MS POWERPOINT XP and e-mail, 06 April 2009 – 10 April 2009
- Basic course STATISTICS and MS EXCEL XP, 01 June 2009 05 June 2009
- Refresher course Dealing with extremely dangerous poisons, drugs and psychotropic substances, 19 January 2009 21 January 2009, 02 February 2009 05 February 2009, 11 May 2009 14 May 2009, 15 June 2009 18 June 2009, 09 November 2009 12 November 2009
- Refresher course psychosocial aspects of disaster and crises management – I, 18 May 2009 – 22 May 2009
- Refresher course psychosocial aspects of disaster and crises management – II, 08 June 2009 – 12 June 2009

## INTERNATIONAL COOPERATION

## Cooperation at the military medical facility level

Brazil Salvador, Bahia

Brazil Universidade Federal de Santa Catarina,

Florianopolis

Bulgaria Military Medical Academy, Sofia

Croatia Department of Microbiology and Parasitology.

University of Rijeka, Rijeka

France Health Service and Army Research Center

(C.R.S.S.A.), La Tronche (Grenoble)

France School of the Health Service of the Armies of

Lyon-Bron (E.S.S.A. Lyon), Lyon

Germany Institute of Microbiology of Federal Armed Forces

Medical Academy, Munich

Germany Institute of Pharmacology and Toxicology of

Federal Armed Forces Medical Academy, Munich

Germany NATO School, Oberammergau

India Pandit Ravishankar Shukla University, Raipur Poland Military Institute of Hygiene and Epidemiology,

Warsaw

Serbia Military Medical Academy, Belgrade

Serbia National Poison Control Centre of Military Medical

Academy, Belgrade

Slovakia Air Forces Hospital, Košice

Slovakia Central Military Hospital, Ružomberok Slovakia Military Health Service, Bratislava

Slovakia Military Institute of Hygiene and Epidemiology,

Bratislava

Sweden FOI NBC-Defence, Umea

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, Riiswiik

The Netherlands Chemical and Biological Division, TNO Prins

Maurits Laboratory, Rijswijk

### INTERNATIONAL COOPERATION

Turkey Gulhane Military Medical Academy, Ankara

Ukraine Military Medical Corps, Kiev

United Kingdom Defence Medical Services Training Centre Keogh

Barracks in Aldershot, Ash Vale

United Kingdom DRDC, Suffield

United States United States Defense Institute of International

Legal Studies, Newport

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

Austria Baxter, Vienna

Belgium GlaxoSmithKline Biologicals, Rixensart

Croatia Institute for Medical Research and Occupational

Health, Zagreb

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

Germany Department of Solid States Nuclear Physics,

University of Leipzig, Leipzig

Germany Max-Planck Institute, Berlin

Hungary Semmelweis University, College of Health Care

Department of Dietetics, Budapest

Mongolia National Research Center for Infectious Diseases,

Ministry of Health, Ulaanbaatar

Portugal University of Coimbra, Department of

Pharmacology, Coimbra

Republic of Korea Medicinal Science Division, Korea Research

Institute of Chemical Technology, Daejeon

Russian Federation M. V. Lomonosov Moscow State University,

Moskva

Slovakia P. J. Šafárik University, Košice

Slovakia Slovak Medical University, Bratislava

Slovakia Virological Institute, Slovak Academy of Sciences,

Bratislava

Sweden University of Umea, Umea

Switzerland Institute of Molecular Systems Biology, Zurich

Switzerland Swiss Institute of Technology, Zürich
United Arab Emirates University, Al Ain

# INTERNATIONAL COOPERATION

United Kingdom Health Protection Agency, Porton Down

United States Emory University, Atlanta

United States Emory University, Department of Pathology,

Atlanta

United States Merck & Co., Inc, Whitehouse Station

United States MMRHVLB/CCID/CDC, Atlanta
United States University of Washington, Seattle

United States Vital Probes, Mayfield, Pa

United States Walter Reed Army Institute of Research, Silver

Spring

United States Wyeth, New Jersey

# Participation in international projects and networks

Belgium European Defence Agency, Brussels
Sweden European Programme for Intervention

Epidemiology Training, European Centre for Disease Prevention and Control, Stockholm

Switzerland European Study Group on Nosocomial Infection,

United States Indiana University, Bloomington, Indiana

# Cooperation in the field of disaster medicine

United Kingdom Royal Centre for Defence Medicine, Birmingham

# Other expert commissions

- J. Bajgar Ad hoc Group of the State Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Biological (Bacteriological) and Toxin Weapons
- R. Chlíbek member of NATO HFMP
- R. Chlíbek supervisor of CEVAG
- L. Jebavý member of European Group for Blood and Marrow Transplantation
- L. Jebavý member of Multinational Association of Supportive Care in Cancer

# INTERNATIONAL COOPERATION

- L. Jebavý member of European Study Group on Nosocomial Infections
- J. Kassa member of NATO CBRN Medical Working Group
- J. Kassa member of Editorial board of Journal of Medical Chemical, Biological and Radiological Defence
- K. Kuča member of Editorial board of Journal of Enzyme Inhibition and Medicinal Chemistry
- A. Macela member of NATO HFMP TG 099
- A. Macela member of NATO HFMP ET 099
- A. Macela Recoop HST Consortium supervisor
- A. Macela member of EDA CapTech GEM3
- A. Macela member of Editorial board of FEMS Immunology and Medical Microbiology
- J. Österreicher member of NATO CBRN Medical Working Group
- J. Österreicher member of NATO RTG-099
- R. Prymula member of European HPV board
- R. Prymula member of Global advisory board on pneumoccocal vaccines
- R. Prymula chairman of CEVAG (Central European Vaccine Advisory Group)
- R. Prymula member of NATO COMEDS WG-MT
- R. Prymula chairman of Joint Clinical Trial Network RECOOP HST
- R. Prymula member of management board of ECDC
- R. Prymula member of European Rotavirus Speakers' Bureau
- R. Prvmula member of Steering Committee ECDC
- M. Špliňo member of Advisory Council of International Biographical Centre
- M. Špliňo member of UN Commission in NY for the control and adherence to the UN Security Council in Iraq
- M. Špliňo member of European Study Group on Nosocomial Infection

# Completed full professorships

# Ferko Alexander

Department of Field Surgery, Faculty of Military Health Sciences, University of Defence, Hradec Králové

area of specialization: Military Surgery

professor's lecture: Liver tumours and current surgical treatment

# Completed associate professorships

#### Čermák Pavel

Institute of Clinical Biochemistry and Laboratory Diagnostics, Department of Clinical Microbiology and ATB Centre, General University Hospital and First Faculty of Medicine, Charles University in Prague

area of specialization: Medical Microbiology

habilitation thesis: Monograph: Microbiological diagnostic of

bloodstream infections

habilitation lecture: Laboratory diagnostic of mycobacterial diseases

- actual trends

# Kuča Kamil

Centre of Advanced Studies, Faculty of Military Health Sciences, University

of Defence, Hradec Králové

area of specialization: Toxicology

habilitation thesis: Development of new acetylcholinesterase

reactivators

habilitation lecture: Drug Design – rational approach to the

development of new drugs

#### **Ondra Peter**

Department of Forensic Medecine and Medical Law, Faculty of Medicine and Dentistry, Palacky University Olomouc

area of specialization: Toxicology

habilitation thesis: Analytical toxicology: identification and

determination of selected toxicologicaly important agents in biological material

habilitation lecture: Drug scene in the Czech republic in the view of

analytical toxicologist

#### Haman Luděk

Department of Field Internal Medicine, Faculty of Military Health Sciences, University of Defence, Hradec Králové

area of specialization: Millitary Internal Medicine

habilitation thesis: Catheter ablation of atrial fibrillation – effectivity

and influence on the quality of life

habilitation lecture: Treatment of heart failure – from

pharmaceuticals to cardiostimulators

#### Slováček Ladislav

Department of Field Internal Medicine, Faculty of Military Health Sciences,

University of Defence, Hradec Králové

area of specialization: Military Internal Medicine

habilitation thesis: Monograph: Haematopoietic stem cell

transplantation and quality of life – theory.

research and practice

habilitation lecture: Quality life management of patients with internal

diseases

# Dissertation defences

# Záň Jozef (Slovakia)

Central Military Hospital Ružomberok. Department of Internal Medicine

study programmes: Millitary Internal Medicine

dissertation: Chronic radiation proctitis – solve argon plasma

coagulation this actual therapeutic problem?

#### Kubíček Miloslav

Military Rehabilitation Centre Slapy nad Vltavou

study programmes: Millitary Internal Medicine

dissertation: The influence of rehabilitation and controlled

nourishment for the quality of body composition in patients after total knee and hip endoprothesis

# Schejbalová Miriam

Institute of Hygiene and Epidemiology Prague, First Faculty of Medicine,

Charles University Prague

study programmes: Military Hygiene

dissertation: Influence of living and working conditions on

human health, lung cancer

#### Slámová Alena

Institute of Hygiene and Epidemiology Prague, First Faculty of Medicine,

Charles University Prague

study programmes: Military Hygiene

dissertation: Malignancies in workers exposed to VCM

# Pejchal Jaroslav

Department of Radibiology, Faculty of Military Health Sciences, University of

Defence, Hradec Králové

study programmes: Military Radiobiology

dissertation: Expression of important proteins in epithelial

cells after irradiation and its use in biodosimetry

#### Boštíková Vanda

Department of Epidemiiology, Faculty of Military Health Sciences, University of Defence, Hradec Králové

study programmes: Medical Microbiology

dissertation: Identification and Global Surveillance of

Varicella-Zoster Virus Genotypes: Progress

Toward a Common System of Strain

Nomenclature

# Lysková Petra

Department of Biological and Biochemical Sciences, University of Pardubice

study programmes: Medical Microbiology

dissertation: Group G streptococci of animal and human

origin and their characteristics

#### Vilasová Zdeňka

Centre of Advanced astudies, Faculty of Military Health Sciences, University of Defence. Hradec Králové

study programmes: Military Radiobiology

dissertation: Molecular mechanism in response of peripheral

blood lymphocytes to gamma irradiation

# Hrstka Zdeněk

Military Health Sciences, University of Defence, Hradec Králové

study programmes: Military Hygiene

dissertation: Psychological and social aspects of foreign

peacekeeping missions

# Kučerová Jana

Regional Hygiene Station Liberec

study programmes: Military Hygiene

dissertation: The implementation of health impact

assessment and health risk assessment methods at work of public health office

# Potáč Michal

Department of Military Medical Service Organization study programmes: Population Protection

dissertation: Measures dealing with human remains cleaning

after a large scale incident

# THE REVIEW OF RESEARCH PROJECTS CARRIED OUT AT THE FACULTY OF MILITARY HEALTH SCIENCES IN 2009

# THE INTERNAL GRANT AGENCY OF THE CZECH REPUBLIC HEALTH SERVICE

# **Principal investigators**

# Hana Střítecká

(9985) Change of body proportion of school children

# Co-investigators

# Rudolf Štětina

(NR8563) Genetic profile of biotransformation and DNA repair genes in cancer patients from the Czech Republic

# Jana Fajfrová

(9933-2) Be in a good form and condition after parturition!

#### Pavol Hlúbik

(9933-2) Be in a good form and condition after parturition!

#### Vladimír Pavlík

(9933-2) Be in a good form and condition after parturition!

# THE EXECUTIVE AGENCY FOR HEALTH AND CONSUMERS

# Co-investigators

#### Jiří Cabal

(100940) ORCHIDS – Evaluation, optimisation, trialling and modelling procedures for mass casualty

#### Kamil Kuča

(100940) ORCHIDS – Evaluation, optimisation, trialling and modelling procedures for mass casualty

# MERCK & CO., INC.

# Co-investigators

#### Vladimír Pavlík

(MK-364-015) A 3-year study to assess the efficacy, safety and tolerability of MK-0364 in obese patient (III phase)

#### **NATO COOPERATIVE GRANT**

# **Principal investigators**

# Kamil Kuča

(CBP.EAP.CLG 983024) Butyrylcholinesterase and aldoximes – bioscavengers for detoxification of organophosphates

# Co-investigators

#### **Daniel Jun**

(CBP.EAP.CLG 983024) Butyrylcholinesterase and aldoximes – bioscavengers for detoxification of organophosphates

# Jana Žďárová Karasová

(CBP.EAP.CLG 983024) Butyrylcholinesterase and aldoximes – bioscavengers for detoxification of organophosphates

#### THE MINISTRY OF EDUCATION. YOUTH AND SPORTS

# **Principal investigators**

# Zuzana Šinkorová

(2B08028) New biological methods of the received dose determination

#### Lenka Hernvchová

(ME08105) Differential proteome analysis of bacterial Francisella tularensis glyco– and phospho– proteins

#### Jiří Stulík

(OC 151) Proteome analysis of extracytoplasmic stress response in Francisella tularensis strain with different virulence

#### Kamil Musílek

(ME09086) Development of novel antidotal treatment against organophosphorus pesticides

# THE REVIEW OF RESEARCH PROJECTS CARRIED OUT AT FMHS

#### Kamil Kuča

(ME 865) Countermeasure against chemical terrorism – development of new antidotes against nerve agents

# Co-investigators

# Kamil Musílek

(ME 865) Countermeasure against chemical terrorism – development of new antidotes against nerve agents

# Lenka Zárybnická

(2B08028) New biological methods of the received dose determination

# Aleš Tichý

(2B08028) New biological methods of the received dose determination

# Zdeňka Vilasová

(2B08028) New biological methods of the received dose determination

#### Lucie Balonová

(ME08105) Differential proteome analysis of bacterial Francisella tularensis glyco– and phospho– proteins

# Jana Klimentová

(ME08105) Differential proteome analysis of bacterial Francisella tularensis glyco– and phospho– proteins

#### Jiří Stulík

(ME08105) Differential proteome analysis of bacterial Francisella tularensis glyco– and phospho– proteins

#### Aleš Tichý

(ME08105) Differential proteome analysis of bacterial Francisella tularensis glyco– and phospho– proteins

# Kamil Kuča

(ME09086) Development of novel antidotal treatment against organophosphorus pesticides

# Miroslav Pohanka

(ME09086) Development of novel antidotal treatment against organophosphorus pesticides

# Jana Žďárová Karasová

(ME09086) Development of novel antidotal treatment against organophosphorus pesticides

# **Daniel Jun**

(ME 865) Countermeasure against chemical terrorism – development of new antidotes against nerve agents

# THE CZECH REPUBLIC GRANT AGENCY

# **Principal investigators**

#### Kamil Musílek

(GP203/09/P130) Development of novel acetylcholinesterase inhibitors as treatment of Myasthenia Gravis

# Juraj Lenčo

(GP301/09/P241) Development of proteomic methods for deeper quantitative analysis of plasma proteome

# Zuzana Kročová

(GA310/07/0226) Study of B-cell interaction with intracellular pathogen Francisella tularensis

# Kamil Kuča

(GP305/07/P162) Relationship between structure of acetylcholinesterase reactivators and their reactivation potency

# Co-investigators

# Jiřina Vávrová

(GA304/08/0329) Study of factors in a tissue microenviroment that influence the process of skeletal muscle reparation

# Zuzana Šinkorová

(GA304/08/0329) Study of factors in a tissue microenviroment that influence the process of skeletal muscle reparation

#### Aleš Tichý

(GA304/08/0329) Study of factors in a tissue microenviroment that influence the process of skeletal muscle reparation

# Lenka Hernychová

(GA203/09/0857) New analytical approaches for identification of proteins with significant attributes for virulence and pathogenity of bacteria

#### THE NOVARTIS

# **Principal investigators**

# Roman Prymula

(2008-001592-30) A phase 2b, open label, randomized, parallel-group multicenter study to evaluate the safety, tolerability and immunogenicity of Novartis Meningococcal B Recombinant Vaccine when administered with or without routine infant vaccinations to healthy infants according to different immunization schedule

# Roman Prymula

(2007-007781-38) A phase 3, partially blinded, randomized, multi-center, controlled study to evaluate imunogenicity, safety and lot to lot consistency of Novartis Meningococcal B Recombinant Vaccine when administered with routine infant vaccinations to healthy infants

# Roman Prymula

(2008-006301-17) A phase 3, open label, multi-center, extension study to evaluate the safety, tolerability and immunogenicity of Novartis Meningococcal B Recombinant Vaccine when administered as a booster at 12 months of age or as a two-dose catch-up to health toddlers who participated in study V72P13

# Roman Prymula

(2009-010106-11) A phase 2 partially observer-blind randomized controlled multi-center dose-ranging and formulation-finding study of a new Novartis Meningococcal B Recombinant Vaccine evaluating the safety and immunogenicity when given concomitantly with routine vaccines in 2-month-old infants

# Co-investigators

#### Roman Chlibek

(2009-010106-11) A phase 2 partially observer-blind randomized controlled multi-center dose-ranging and formulation-finding study of a new Novartis Meningococcal B Recombinant Vaccine evaluating the safety and immunogenicity when given concomitantly with routine vaccines in 2-month-old infants

#### Roman Chlibek

(2008-001592-30) A phase 2b, open label, randomized, parallel-group multicenter study to evaluate the safety, tolerability and immunogenicity of Novartis Meningococcal B Recombinant Vaccine when administered with or without routine infant vaccinations to healthy infants according to different immunization schedule

#### Roman Chlibek

(2007-007781-38) A phase 3, partially blinded, randomized, multi-center, controlled study to evaluate imunogenicity, safety and lot to lot consistency of Novartis Meningococcal B Recombinant Vaccine when administered with routine infant vaccinations to healthy infants

#### Roman Chlibek

(2008-006301-17) A phase 3, open label, multi-center, extension study to evaluate the safety, tolerability and immunogenicity of Novartis Meningococcal B Recombinant Vaccine when administered as a booster at 12 months of age or as a two-dose catch-up to health toddlers who participated in study V72P13

# THE GLAXOSMITHKLINE BIOLOGICALS CO.

# **Principal investigators**

#### Roman Chlibek

(112077 (Zoster-010)) A phase II, observer-blind, randomised, placebo-controlled, adjuvant-dose selection, multicenter prophylactic vaccination study to evaluate the immunogenicity and safety of GSK Biologicals' herpes zoster vaccine, gE/AS01B, in comparison to gE combined with ½ dose AS01B adjuvant (gE/AS01E), to unadjuvanted gE (gE/Saline), and to Saline (placebo) when administered twice in subjects aged 50 years and older

# Roman Chlíbek

(108494, Zoster-003) A phase II, single-blind, randomized, controlled, multicentre vaccination study to evaluate the safety and immune response of the GSK Biologicals Zoster vaccine, gE/AS01B, and to compare 3 doses of gE with AS01B adjuvant in healthy elderly subjects, aged 60 to 69 years and 70 years and above

# Co-investigators

# Jan Smetana

(108494, Zoster-003) A phase II, single-blind, randomized, controlled, multicentre vaccination study to evaluate the safety and immune response of the GSK Biologicals Zoster vaccine, gE/AS01B, and to compare 3 doses of gE with AS01B adjuvant in healthy elderly subjects, aged 60 to 69 years and 70 years and above

# NATO SCIENCE FOR PEACE AND SECURITY (SPS) PROGRAMME

# **Principal investigators**

#### Leo Klein

(CBP.MD.ATC.983603) Advanced Training Course: "Best Way of Training for Mass Casualty Situations"

# **EU COST PROGRAMME**

# Co-investigators

#### Jiří Stulík

(COST Action B28) Array technologies for BSL3 and BSL4 pathogens

# **DEFENCE RESEARCH PROJECTS - INITIATED IN 2009**

# **Daniel Jun**

(OVUOFVZ200902) OTRAVA – Novel prophylactic antidotes of nerve agent poisonings based on scavengers

# Kamil Kuča

(OVUOFVZ200902) OTRAVA – Novel prophylactic antidotes of nerve agent poisonings based on scavengers

#### Martin Hubálek

(OVUOFVZ200901) BIODEFENCE – Classification of biological agents – support of an international project "Establishment and management of a common database of B-agents – A European Laboratory Biodefence Network

# lvo Žvák

(OVUOFVZ200904) ACETABULA – Crossover external fixator of acetabular fractures

#### Leo Klein

(OVUOFVZ200903) NOTES – Surgical treatment of the digestive tube's penetrating injuries using Natural Orifice Transluminal Endoscopic Surgery

# Jiří Páral

(OVUOFVZ200903) NOTES – Surgical treatment of the digestive tube's penetrating injuries using Natural Orifice Transluminal Endoscopic Surgery

# Ladislav Novotný

(OVUOFVZ200905) MORČE – Influence of the nerve agent and reactivators of acetylcholine esterase on the Guinea pig

#### **DEFENCE RESEARCH PROJECTS - CONTINUING IN 2009**

#### Jiří Stulík

(OVUOFVZ200808) FRANCIS – Development of new prophylactic tools against Francisella tularensis infection

#### Jiřina Vávrová

(OVUOFVZ200806) RONSDOZ – Noninvasive measurement of proinflamatory markers of oxidative stress in irradiated as an indicator of received dose of radiation. Protective role of acetyl–L–carnitine

# Zuzana Šinkorová

(OVUOFVZ200809) INDIKÁTORY II – Reverse detection of received ionizing radiation dose by monitoring of cell population changes using biophysical methods

# Kamil Kuča

(OVUOFVZ200803) SUBSTANCE – Development of novel decontaminants and disinfectants of skin based on micellar compounds

#### Jiří Páral

(OVUOFVZ200804) LEPIDLO – Testing of possible use of cyanoacrylat tissue glues in high risk intestinal anastomoses

#### Kamil Musílek

(OVUOFVZ200805) INHIBITOR – Novel inhibitors of acetylcholinesterase as prophylaxis of nerve agent poisonings

# Zuzana Čermáková

(OVUVZU2008001) LEPTOSPIROSIS – Risk evaluation and new possibilities of detection

# Miroslav Pohanka

(OVUOFVZ200807) PROTEIN – Biosensors for determination of nerve agents and yperites using recombinant proteins and nanotechnology

# Rudolf Štětina

(OVUOFVZ200810) YPERIT – Potential interference of toxic properties of sulphur mustard

# Miroslav Faifr

(OVUVZU2008002) HOREČKA – Method of viral hemorrhagic fevers' causative agents rapid detection and identification

# THE REVIEW OF RESEARCH PROJECTS CARRIED OUT AT FMHS

#### Jiří Cabal

(OVUOFVZ200801) REAKTIVÁTOR – Robotized system for in vitro evaluation of novel rectivators of acetylcholinesterase inhibited by nerve agents

# Jana Žďárová Karasová

(OVUOFVZ200811) FARMAKO – Determination of important pharmacokinetic and biochemical parameters and evaluation of blood–brain barrier penetration using drugs introduced to Czech Army

# Jaroslav Peichal

(OVUOFVZ200812) RADSPEC – Short-term and long-term nonspecific changes in organisms exposed to high and low doses of nerve agents on cellular and molecular level

#### **RESEARCH AIMS**

# Leo Klein, Ladislav Jebavý

(MO0FVZ0000503) Military – medical aspects of war surgery and war internal medicine

#### Jiří Kassa

(MO0FVZ0000501) Medical countermeasures of nuclear, biological and chemical casualties

#### Karel Antoš

(MO0FVZ0000604) Information support of crises management in health care

# Miroslav Špliňo. Pavol Hlúbik

(MO0FVZ0000502) Implementation of the new information of hygiene, preventive medicine and epidemiology into the military health care

# ARTICLES IN JOURNALS WITH IMPACT FACTOR

- BAJGAR, J., FUSEK, J., KASSA, J., KUČA, K., JUN, D. Chemical aspects of pharmacological prophylaxis against nerve agent poisoning. *Current Medicinal Chemistry*, 2009, vol. 16, no. 23, p. 2977–2986. IF 4.823
- BALONOVÁ, L., HERNYCHOVÁ, L., BÍLKOVÁ, Z. Bioanalytical tools for the discovery of eukaryotic glycoproteins applied to the analysis of bacterial glycoproteins. Expert Review of Proteomics, 2009, vol. 6, no. 1, p. 75–85. IF 3.848
- BANĎOUCHOVÁ, H., SEDLÁČKOVÁ, J., HUBÁLEK, M., POHANKA, M., PECKOVÁ, L., TREML, F., VITULA, F., PIKULA, J. Susceptibility of selected murine and microtine species to infection by a wild strain of Francisella tularensis subsp. holarctica. *Veterinární medicína*, 2009, vol. 54, no. 4, p. 64–74. IF 0.659
- BANĎOUCHOVÁ, H., SEDLÁČKOVÁ, J., POHANKA, M., NOVOTNÝ, L., HUBÁLEK, M., TREML, F., VITULA, F., PIKULA, J. Tularemia induces different biochemical responses in BALB/c mice and common voles. BMC Infectious Diseases, 2009, vol. 9, p. 101. IF 2.356
- BOŠTÍKOVÁ, V., LOPAREV, V., RUBTCOVA, E., TZANEVA, V., SAUERBREI, A., ROBO, A., SATTLER-DORBACHER, E., HANOVCOVÁ, I., ŠTĚPÁNOVÁ, V., ŠPLIŇO, M., EREMIN, V., KOSKINIEMI, M., VANKOVA, O., SCHMID, D. Distribution of varicellazoster virus (VZV) wild-type genotypes in northern and southern Europe: evidence for high conservation of circulating genotypes. *Virology*, 2009, vol. 2009, no. 383, p. 216–225. IF 3.539
- BOŠTÍKOVÁ, V., MACNEIL, A., REYNOLDS, M., BRADEN, Z., CARROLL, D., KAREM, K., SMITH, S., DAVIDSON, W., LI, Y., MOUNDELI, A., MOMBOULI, J., JUMAAN, A., SCHMID, D., REGNERY, R., DAMON, I. Transmission of ransmission of atypical varicella-zoster virus infections involving palm and sole manifestations in an area with mf atypical varicella-zoster virus infections involving palm and sole manifestations in an area with monkeypox endemicity.. Clinical Infectious Disease, 2009, vol. 2009, no. 1, p. 6–8. IF 8.266
- BOŠTÍK, P., KOBKITJAROEN, J., TANG, W., VILLINGER, F., PEREIRA, L., LITTLE, D., STEPHENSON, S., BOUZYK, M., ANSARI, A. Decreased NK cell frequency and function is associated with increased risk of KIR3DL allele polymorphism in SIV- infected rhesus macaques with high viral loads. *Journal of Immunology*, 2009, vol. 182, p. 3638–3649. IF 6

- BUREŠ, J., KOPÁČOVÁ, M., KVĚTINA, J., ÖSTERREICHER, J., ŠINKOROVÁ, Z., SVOBODA, Z., TACHECÍ, I., FILIP, S., ŠPELDA, S., KUNEŠ, J., REJCHRT, S. Different solutions used for submucosal injection influenced early healing of gastric endoscopic mucosal resection in a preclinical study in experimental pigs. Surgical Endoscopy, 2009, vol. 23, no. 9, p. 2094–2101. IF 3.231
- DAMKOVÁ, V., SEDLÁČKOVÁ, J., BANĎOUCHOVÁ, H., PECKOVÁ, L., VITULA, F., HILSCHEROVÁ, K., PASKOVÁ, V., KOHOUTEK, J., POHANKA, M., PIKULA, J. Effects of cyanobacterial biomass on avian reproduction: a japanese quail model. *Neuroendocrinology Letters*, 2009, vol. 30, no. suppl. 1, p. 205–210. IF 1.359
- FILIP, S., MOKRÝ, J., VÁVROVÁ, J., ČÍŽKOVÁ, D., ŠINKOROVÁ, Z., TOŠNEROVÁ, V., BLÁHA, V., Homing of lin- / CD117+ hematopoietic stem cells. *Transfusion and Apheresis Science*, 2009, vol. 41, p. 183– 190. IF 0.949
- HÁJEK, P., BAJGAR, J., SLÍŽOVA, D., KRS, O., KUČA, K., ČAPEK, L., FUSEK, J. Different inhibition of acetylcholinesterase in selected parts of the rat brain following intoxication with VX and Russian VX. *Drug and Chemical Toxicology*, 2009, vol. 32, no. 1, p. 1–8. IF 1.409
- HAKALA, K., LINK, M., SZOTAKOVA, B., SKALOVA, L., KOSTIAINEN, R., KETOLA, R. Characterization of metabolites of sibutramine in primary cultures of rat hepatocytes by liquid chromatography-ion trap mass spectrometry. *Analytical and Bioanalytical Chemistry*, 2009, vol. 393, no. 4, p. 1327–1336. IF 3.328
- HAMAN, L., PAŘÍZEK, P., VOJÁČEK, J. Precordial thump efficacy in termination of induced ventricular arrhythmias. *Resuscitation*, 2009, vol. 80, no. 1, p. 14–16. IF 2.513
- HAMAN, L., PRAUS, R., PAŘÍZEK, P. False image of left ventricular diverticulum caused by local hypertrophy. *Acta Cardiologica*, 2009, vol. 2009, no. 64, p. 553–554. IF 0.581
- HAMAN, L., PRAUS, R., PAŘÍZEK, P. Nonreentrant atrioventricular nodal tachycardia. *Military Medicine*, 2009, vol. 2009, no. 174(8), p. 866–868. IF 0.64
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- 17. HORÁČEK, J., JEBAVÝ, L., ULRYCHOVÁ, M., TICHÝ, M., PUDIL, R., ŽÁK, P., MALÝ, J. Glycogen phosphorylase BB could be a new biomarker for detection of cardiac toxicity during hematopoietic cell

- transplantation for hematological malignancies. *Bone Marrow Transplantation*, 2009, no. 9, p. 306. IF 3.4
- JAKL, M., HORÁČEK, J., JEBAVÝ, L., PUDIL, R. Continuous 24-h monitoring of electrocardiogram during anthracycline-based therapy in acute leukemia. *Leukemia Research*, 2009, vol. 2009, no. 8, p. e109– e110. IF 2.39
- JEONG, HC., PARK, NJ., CHONG, HC., MUSÍLEK, K., KASSA, J., KUČA, K., JUNG, YS. Fluorinated pyridinium oximes as potential reactivators for acetylcholinesterases inhibited by paraoxon organophosphorus agent. *Bioorganic & Medicinal Chemistry*, 2009, vol. 17, no. 17, p. 6213–6217. IF 3.075
- JEŽKOVÁ, A., ŽĎÁROVÁ KARASOVÁ, J., DOHNAL, V., POLIŠENSKÁ,
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