РЕСУРСИ ПОДУНАВСКОГ РЕГИОНА: МОГУЋНОСТИ САРАДЊЕ И КОРИШЋЕЊА

RESOURCEN DER DONAU-REGION: MÖGLICHKEITEN ZUR NUTZUNG UND ZUSAMMENARBEIT

HUMBOLDT-KOLLEG

RESOURCES OF DANUBIAN REGION: THE POSSIBILITY OF COOPERATION AND UTILIZATION

Belgrade, June 12-15, 2013

BOOK OF ABSTRACTS


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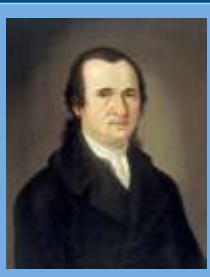
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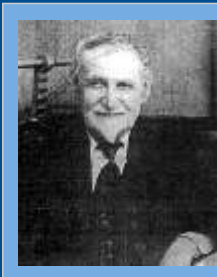
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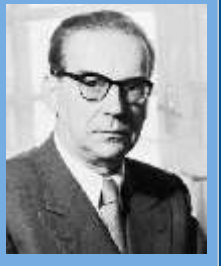
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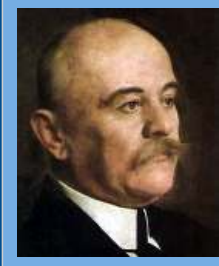
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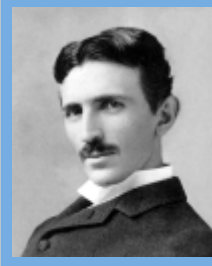
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HUMBOLDT-KOLLEG BELGRAD 2013

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RESOURCEN DER DONAU-REGION:
MÖGLICHKEITEN ZUR NUTZUNG UND ZUSAMMENARBEIT
Belgrade, June 12-15, 2013

Organized by: HUMBOLDT-CLUB SERBIA

Co-organizer: Institute for Biological Research „Siniša Stanković“

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Published by: Humbolt-Club Serbia, Studentski trg 1, 11000 Belgrade, Serbia

The publication of this issue is financially supported by the Alexander von Humboldt Foundation and the Ministry of Education and Science of Serbia

Abstracts are published as submitted by the authors.

Websites: http://www.humboldt-serbia.ac.rs/kolleg2013/index.html
http://www.humboldt-serbia.ac.rs

Computer text design: Dragana Ilić
Printed by: "Planeta print" Printing Office, Ruzveltova 10, Belgrade
Number of copies: 130

HUMBOLDT-KOLLEG BELGRAD 2013

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RESOURCEN DER DONAU-REGION:
MÖGLICHKEITEN ZUR NUTZUNG UND ZUSAMMENARBEIT
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Editors: Luka Č. Popović, Melita Vidaković

Belgrade, 2013

ХУМБОЛТОВА МЕЂУНАРОДНА НАУЧНА КОНФЕРЕНЦИЈА

РЕСУРСИ ПОДУНАВСКОГ РЕГИОНА: МОГУЋНОСТИ САРАДЊЕ И КОРИШЋЕЊА

Београд, 12-15. јун 2013.

Организатор
Хумболтов клуб Србије

КЊИГА РЕЗИМЕА

Уредници: Лука Поповић, Мелита Видаковић

Београд, 2013.

Under auspices / Schirmherrschaft

Serbian Academy of Sciences and Arts

University of Belgrade

Botschaft
der Bundesrepublik Deutschland
Belgrad

We thank for the support / Wir danken fur die Unterstützung

Alexander von Humboldt
Stiftung/Foundation

We also acknowledge support from /Wir danken auch

Ministry of Education
and Science of
Republic of Serbia

Institute for
Biological Research
“Siniša Stanković“

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Хумболтов клуб Србије, удружење које окупља стипендисте и добитнике награде „Фондације Александер фон Хумболт“ у Србији, основан је 16. октобра 1990. године у Београду. Од оснивања до данас Клуб настоји да поспеши научну сарадњу, подстиче научни подмладак и промовише науку у друштву. Једна од основних активности Клуба су организовање научно-стручних предавања и организовање научних скупова.

Конференција „Ресурси подунавског региона: Могућност сарадње и коришћења“ која се одржава од 12. до 15. јуна 2013. године, је једна од активности Клуба у циљу промовисања и поспешивање сарадње у региону. Дунав је река која спаја различите народе и културе у Централној Европи и Балканском полуострву, дефинишући један део европског простора као Подунавски регион. Земље Подунавског региона су економски упућене једне на друге, првенствено због могућности коришћења природних ресурса, добити од речног саобраћаја и туризма. Идеја ове конференције је да укаже на могућности сарадње у Подунавском региону, у свим областима од економске (као пољопривреде, водопривреде, енергије) до научне и културне сарадње, а са циљем да се очувају и на одговарајући начин користе природни ресурси Дунавског слива.

На овој Конференцији, учествују научници из свих подунавских земаља (Немачке, Аустрије, Словачке, Мађарске, Хрватске, Србије, Румуније, Бугарске, Украјине и Молдавије), међу којима је велики број Хумболтоваца, научника који су били добитници награде „Фондације Александер фон Хумболт“, али и велики број младих научника који су потенцијални добитници престижне стипендије. Надам се да ће Конференција остварити свој основни циљ, а то је поспешивање сарадње у свим областима у Подунавском региону.

Користим прилику да се захвалим „Фондацији Александер фон Хумболт“ која је подржала ову Конференцију, као и Српској академији наука и уметности и Универзитету у Београду који су покровитељи Конференције.

Београд, јун 2013.

Лука Ч. Поповић,
Председник Хумболтовог клуба Србије

Der Humboldt-Club Serbien, der Verein, der Stipendiaten und Preisträger der Alexander-von-Humboldt-Stiftung versammelt, wurde am 16. Oktober 1990 i Belgrad gegründet. Seit seiner Gründung bis heute bemüht sich der Club, die wissenschaftliche Zusammenarbeit zu unterstützen, den wissenschaftlichen Nachwuchs zu fördern und die Wissenschaft der Gesellschaft nahe zu bringen. Eine der Grundaktivitäten des Clubs ist die Organisation von fachwissenschaftlichen Vorträgen und wissenschaftlichen Tagungen.

Die Konferenz „*Resourcen der Donau-Region: Möglichkeiten zur Nutzung und Zusammenarbeit*“, die vom 12. bis 15. Juni stattfindet, ist eine der Aktivitäten des Clubs, mit dem Ziel, die Zusammenarbeit in der Region zu popularisieren und zu fördern. Die Donau ist ein Fluss, der verschiedene Völker und Kulturen in Mitteleuropa und auf dem Balkan verbindet, indem ein Teil des europäischen Raumes als Donau-Region definiert wird. Die Länder in dieser Region sind wirtschaftlich aufeinander angewiesen, vor allem wegen der Möglichkeiten von Nutzung der Naturresourcen, wegen des Gewinns aus dem Fluss- und Fremdenverkehr. Die Idee dieser Konferenz ist, auf die Möglichkeiten einer Zusammenarbeit in der Donau-Region auf allen Gebieten hinzuweisen, von der wirtschaftlichen (Land- und Wasserwirtschaft, Energie) bis zur wissenschaftlichen und kulturellen Zusammenarbeit, mit dem Ziel, die natürlichen Resourcen dieses Gebietes aufzubewahren und entsprechend zu nutzen.

An dieser Konferenz werden Wissenschaftler aus allen Donauländern (Deutschland, Österreich, der Slowakei, Ungarn, Kroatien, Serbien, Rumänien, Bulgarien, der Ukraine und Moldawien) teilnehmen, darunter viele Humboldtianer, Wissenschaftler, Preisträger der AvH-Stiftung, aber auch viele junge Wissenschaftler, die künftige Stipendiaten werden können. Ich hoffe, dass die Konfesrenz ihr Ziel erreichen wird, und zwar die Förderung der Zusammenarbeit auf allen Gebieten in der Donau-Region.

Ich möchte diese Gelegenheit wahrnehmen, um der Alexander-von-Humboldt-Stiftung für ihre Unterstützung dieser Konferenz, wie auch der Serbischen Akademie der Wissenschaften und Künste und der Universität in Belgrad für die Schirmherrschaft der Konferenz, meinen Dank zu sagen.

Belgrad, im Juni 2013

Luka Č. Popović,
Präsident des Humboldt-Clubs Serbien

The Humboldt-Club Serbia, an association of Alexander von Humboldt-Foundation fellows and award winners in Serbia, was founded in Belgrade, on October 16, 1990. From its beginnings, the Club aims to further develop scientific collaboration, to foster young researchers and to promote science in our society. One of the main activities of the Club is to organize scientific lectures and scientific meetings.

The Conference "Resources of Danubian region: the possibility of cooperation and utilization", that is going to be held in June 12-15, 2013, is one of the Club activities aiming to promote and strengthen the regional collaboration. Danube is a river that connects different nations and cultures in Central Europe and Balkan Peninsula, defining one region of Europe as the Danubian region. Countries in the Danubian region are economically tied by the possibility to share natural, capital and human resources, and the benefit from water transport and river tourism. The idea of this conference is to point out the possibilities of cooperation in the Danubian region in all fields, from the economical (such as agriculture, water resources, energy) to the scientific and cultural collaboration, with the goal to preserve and make appropriate use of the natural resources of Danubian basin.

The participants of this meeting are scientists of all Danubian countries (Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Romania, Bulgaria, Ukraine and Moldavia), among which many are Humboldtians, scientists that have won the fellowship of the Alexander von Humboldt-Foundation, but also a large number of young scientists that are potential winners of this prestige fellowship. I hope that this conference will fulfill its main aim and that is the improvement of cooperation in all fields in the Danubian region.

I use this opportunity to thank the Alexander von Humboldt-Foundation for supporting this conference, and also the Serbian Academy of Science and Arts and University of Belgrade, under whose auspices this meeting is organized.

Belgrade, June 2013

Luka Č. Popović
President of the Humboldt-Club Serbia

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Abstracts

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PRESENCE OF ARSENIC IN THE GROUNDWATER OF VOJVODINA

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In Vojvodina, groundwater is often used for water supply. The quality of this groundwater is a consequence of its origin, and represents a unique problem facing the region - much of the groundwater used for water supply contains unacceptably high levels of arsenic. Arsenic is recognized as a great threat to human health and is classified as a Group I carcinogenic substance to humans, based on epidemiological evidence. Serbia regulates the maximum allowed concentration of arsenic as 10 μg/l. Based on the latest data from monitoring arsenic concentrations in groundwater in Vojvodina, in most cases the arsenic content ranges from 50 to 100 μg As/l, but in some municipalities is found as high as 250 μg As/l. As a result, about 50% of the inhabitants do not have access to drinking water containing safe levels of arsenic. The number of residents consuming water with arsenic concentrations more than 10 μg/l is over 775,000. Moreover, more than 420,000 people use water with an arsenic content higher than 50 μg/l.

To comply with EU and Serbian regulations, severe interventions are necessary in the water sector which will require tremendous expenditure, for example, on the adaptation of proper treatment technologies and to apply new technological solutions for arsenic removal. One aspect which requires further investigation is the future potential for opening new sources at local, microregional and regional levels.

In the last ten years, in this region a number of projects were conducted in order to investigate different technological solutions for arsenic removal in the presence of high amounts of natural organic matter. As well as Serbian officials, the EU also recognised this problem, and as a result financed the ARSENICPLATFORM research project, a cooperation between the University of Novi Sad Faculty of Sciences, and Eötvös József College from Baja, Hungary. The objective of the project is to implement a cross-border Platform with the participation of EJF and UNSPMF for initiating a research program to find solutions to critical problems in drinking water quality management in the region.

This project has enabled us to enhance our ability to perform research in the field of drinking water supply. The laboratory and subsequent pilot-scale experiments (to

investigate various types of removal mechanism and the efficacy of technological units) performed during the project will serve as the basis for determining in future the effects of relevant environmental factors and other contaminating substances on As removal. Our ongoing efforts to disseminate the project results will equip target groups with better understanding and skills for the development of cost-efficient drinking water management strategies, such as proper treatment process selection or optimized operation of water treatment facilities.

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ANALYSIS OF PHENOLIC CONTENT AND ANTIOXIDATIVE CAPACITY OF RED WINES FROM SERBIA

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Red wine is a rich source of phenolic compounds and it is well known that regular wine consummation in reasonable amounts can improve health. Phenols present in wines include the flavonoids and the non-flavonoids and they contribute to sensorial characteristics of wine. Also, many researches suggested that these compounds, which possess antioxidant activity, could have positive role in prevention of diseases such as coronary heart disease and carcinogenesis. Final composition of phenols in wine depends on their content in grapes, the extraction parameters, winemaking technology, etc. The aim of this study was to conduct preliminary determination of total phenolic and total flavonoid content as well as antioxidative capacity of wines produced in winery «Radovanović» from Krnjevo, Serbia.

Wines were produced from Cabernet Sauvignon grape using oak barrels from woods of different geographical origin. Barrels were made from American, Serbian, Croatian and French oak. Analysis was performed on twenty wine samples (five from each barrel type). Total phenolic content as well as total flavonoid content was determined according to the colorimetric Folin-Ciocalteu method. Radical-scavenging capacity (RSC) was measured by evaluating the quenching of the stable DPPH and calculation of mean scavenging concentration (RSC_{50}) by regression analysis.

Total phenolic content varied from 2046.67 to 2156.06 mg/l expressed as gallic acid equivalents. The amounts of flavonoids ranged from 67.3 to 73.5 % of total phenolic content. Also, all samples showed evident antioxidant effect. Wines made in Serbian oak barrels had the highest average phenolic content, while the lowest was found for French barrels. These results show that relatively high concentrations of phenols and flavonoids are present in wines produced in Serbia. Also, it was noticed that origin of oak barrels did not considerably influence on measured parameters.

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TRENDS IN VIRTUAL MANUFACTURING

Manufacturing is a dynamic socio-technical system, which is operating in a turbulent environment. Changes are normal and continuous at all levels and the competition is forcing manufacturers to improve the quality, reduce the delivery time and lower the cost. In the course of a rapidly advancing information technology, nowadays, digital tools and systems are applied in all industrial branches supporting a great variety of different tasks along the lifecycle of factories and products fabrication.

Manufacturing systems and processes are being combined with simulation technology and computer hardware in order to achieve costs reductions and increase the profitability. One of the most important directions of the recent developments is "Virtual Manufacturing" which supposes simulation of a product and processes involved in its fabrication. Simulation technology enables companies to optimize some key aspects which include manufacturability, final shape, residual stress levels, and product durability. In addition, virtual manufacturing also reduces the cost of tooling, eliminates the need for multiple physical prototypes, and reduces material waste. It provides manufacturers with the confidence that they can deliver quality products to market on time, with desired quality and within budget.

The entire lifecycle of the products, from their conception, design and manufacture to service and disposal, is handled and controlled by Product lifecycle management (PLM) systems. PLM has to be seen as the entire collection of tools and working methods integrated together, in order to address either single stages of the lifecycle, connect different tasks or manage the whole process.

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RECYCLING OF WASTE MOLYBDENUM DISILICIDE HEATING ELEMENTS

Aim

Porous acicular mullite ($3Al_2O_3 \cdot 2SiO_2$) is a promising material for fabrication of diesel particular filters which are widely used for filtration of diesel engine exhaust. In this study, the possibility to use waste molybdenum disilicide ($MoSi_2$) heating element for fabrication of mullite was investigated.

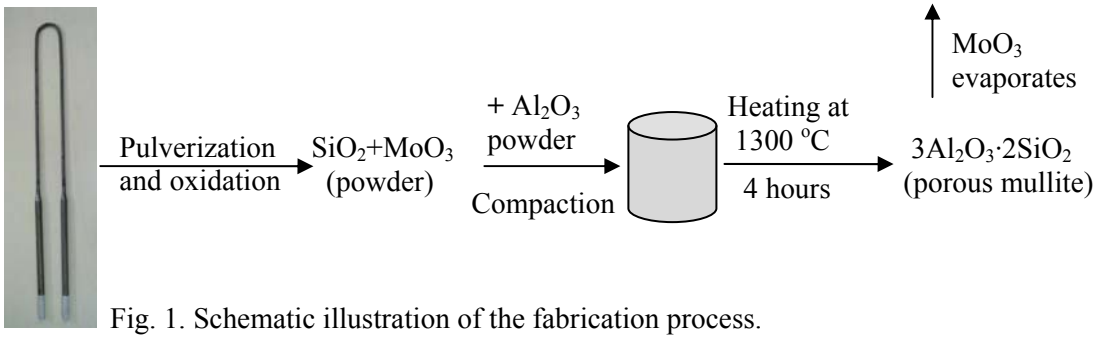

Fig. 1. Schematic illustration of the fabrication process.

Results

Careful calcination of pulverized heating element led to the formation of a mixture of MoO_3 and amorphous SiO_2. This mixture was employed as both SiO_2 precursor and the pore former. SiO_2 reacted with added Al_2O_3 to create mullite whereas MoO_3 evaporated leaving considerable porosity. Pure mullite with porosity of more than 60% and compressive strength of ~ 20 MPa was obtained after heat treatment (sintering) at 1300 °C. The microstructure (Fig. 2) consisted of elongated, rectangular, prism-like grains which are known to be effective in filtration of diesel engine exhaust.

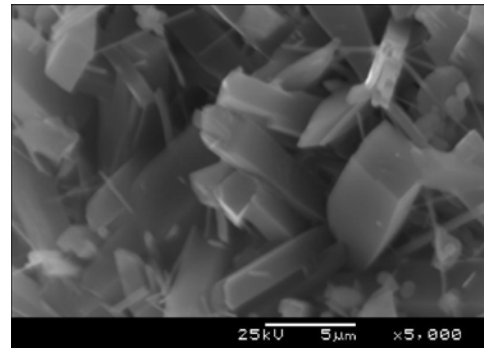

Fig. 2. Acicular mullite grains after heat treatment at 1300 °C for 4 hours.

Conclusion

Waste $MoSi_2$ heating elements can be effectively used for fabrication of porous acicular mullite.

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REGIONAL COOPERATION AS A PRECONDITION FOR ECOLOGIC SUSTAINABILITY

The EU Strategy for the Danube Region (EUSDR) is a macro-regional strategy adopted by the European Commission in December 2010 and endorsed by the European Council in 2011. The Commission, together with the Danube Region countries and stakeholders, in order to address common challenges, jointly developed the Strategy. The Strategy seeks to create synergies and coordination between existing policies and initiatives taking place across the Danube Region. The Strategy is not about funding, it is about closer cooperation.

Regional Cooperation, as a precondition for the stable regulation of many things, is necessary especially for revealing different ecological matters. Concerning the river Danube we have to say straight: if you are not preparing the ecological conditions in the beginning of a river than you will end with many troubles. Ecological sustainability was not the only reason to start this regional cooperation. The background was for sure also a political one. It started with the ecological cooperation because on this field organisations already exist for a longer time. One of the main issues but also one of the difficulties is to create this regional cooperation over boarders. The EUSDR started with three no's: No money, no new institutions, and no new rules. This was in the beginning a shock but on the other side, I think it was a very good decision because we have to use what exists and we have to bring together the countries along the river Danube.

The Danube Region Strategy addresses a wide range of issues; these are divided among 4 pillars and 11 priority areas. Each priority area is managed by 2 Priority Area Coordinators (PACs).

PA 1A | Mobility | Waterways
Priority Area 1A "To improve mobility and intermodality of inland waterways" is coordinated by Austria and Romania.

PA 1B | Mobility | Rail-Road-Air
Priority Area 1B "To improve mobility and intermodality - rail, road and air" is coordinated by Slovenia and Serbia.

PA 02 | Energy
Priority Area 2 "To encourage more sustainable energy" is coordinated by Hungary and the Czech Republic.

PA 03 | Culture & Tourism
Priority Area 03 "To promote culture and tourism, people to people contacts" is coordinated by Bulgaria and Romania.

PA 04 | Water Quality
Priority Area 4 of the EUSDR "To restore and maintain the quality of waters" is coordinated by Hungary and Slovakia.

PA 05 | Environmental Risks
Priority Area 05 of the EUSDR "To manage environmental risks" is coordinated by Hungary and Romania.

PA 06 | Biodiversity, landscapes, quality of air and soils
Priority Area 06 "To preserve biodiversity, landscapes and the quality of air and soils" is coordinated by the Land Bavaria (Germany) and Croatia.

PA 07 | Knowledge Society
Priority Area 07 "To develop the Knowledge Society (research, education and ICT)" is coordinated by Slovakia and Serbia.

PA 08 | Competitiveness
Priority Area 08 "To support the competitiveness of enterprises" is coordinated by the Land Baden-Württemberg (Germany) and Croatia.

PA 09 | People & Skills
Priority Area 09 of the EUSDR "To invest in people and skills" is coordinated by Austria and Moldova.

PA 10 | Institutional capacity and cooperation
Priority Area 10 "To step up institutional capacity and cooperation" is coordinated by the City of Vienna (Austria) and Slovenia.

PA 11 | Security
Priority Area 11 of the EUSDR "To work together to tackle security and organised crime" is coordinated by Germany and Bulgaria.

For ecological sustainability, different Priority Areas have a different importance. The priorities are not only technological and ecological results but also the creation of the environmental conditions under which the river and the region is used. These are examples in which way ecological sustainability is touched but also concerning for example institutional capacity and cooperation is one of the results of this demand.

In the moment this structures of EUSDR are growing and deducting new problems in cooperation. It is not an easy job to create efficiency, because not only the problems are difficult but also to create this over cross border cooperation is a partly new experience between administrations, governments and politics.

In the meanwhile, it is quite clear that it will have interesting results for all the partners involved. One of the problem is, without any doubt, the differentiated political situation in the countries along the river Danube, some changes of priority and the ways of financing. To say it quite straight: there is enough money, but sometimes there is no simple and logic solution in which these funds will be used successfully. Also this is a kind of sustainability, which is very important for the ecological situation.

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ADVANCED RESEARCH IN ENERGY SYSTEMS - BILATERAL PROJECT KARLSRUHE-BELGRADE

Bilateral project "Investigation of the turbulent structure behind the axial fan impellers by use of the HWA, LDA and PIV measuring techniques and CFD analysis" (period 2011-2012.) has treated complex problems of theoretical and applied fluid mechanics. This Project has been established between the Faculty of Mechanical Engineering University of Belgrade and Faculty of Mechanical Engineering, Institute of Fluid Machinery, Karlsruhe Institute of Technology. Twelve researchers were officially involved in Project, equally from both sides. Experiments and computations were conducted in both faculties.

Study of the complex turbulent vortex structures (Fig.1) belongs to the class of the most complex problems of energetic and turbulence and has, not only theoretical, but also practical significance. Phenomenon of the swirl flow field and flow in rotating systems is present in various engineering systems including turbomachines, cyclones, vortex separators, burners, combustions systems and etc. Investigated vortex structures are closely related to the problems of noise and vibrations in thermotechnical installations and other energy plants. Flow and energy characteristics of the turbulent swirl flow field behind the axial fan impeller has been studied by use of the modern laser based measuring techniques such as Laser Doppler Anemometry (LDA) and High Speed Stereo Particle Image Velocimetry (HSS PIV).

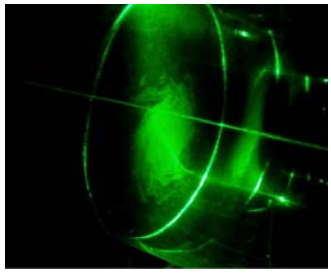
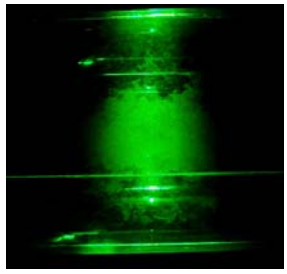
a)  b) 

Figure 1. Laser illumination of the turbulent swirl flow behind axial fan in a pipe: a) cross-section and b) meridian section.

Obtained results enable taking into consideration swirl effects, rotation and vortex structures in the computation and construction of the technical systems where the swirl flow exists. Project plan has been successfully fulfilled and even overcome.

Acknowledgment: Project was financially supported by the Ministry of Education, Science and Technological Development Republic of Serbia (through Bilateral and Project No. TR 35046) and German Academic Exchange Service (DAAD) what is gratefully acknowledged.

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FRONTIERS OF ROMAN EMPIRE WORLD HERITAGE SITE – POTENTIAL NOMINATION OF THE DANUBE RIVER FRONTIER OF MOESIA SUPERIOR

History, social and economic development of the Roman province Moesia Superior, character and type of archaeological sites and finds, were largely determined in the first place by Moesia being frontier province. Its main feature from Roman times is certainly *limes* – a fortified northern border along the Danube that was part of imperial defensive system, with legionary camps in Singidunum, Viminacium and Margum(?) and more then 30 auxiliary forts and fortresses along the river line.

Remains of complex military sites are part of approximately 2000 km long Danube river frontier, section of the frontier of Roman Empire, accepted now as unique monument on the World Heritage list. It is the first complex, transnational world heritage site, acknowledged as artificial frontiers from the height of the Empire, from Traian to Septimius Severus. Different from region to region, under the modular Frontiers of Roman Empire, on the list already are Hadrian wall, Antonine wall, and Upper Germanian and Raetian frontier. Nominations are in preparation for limes sections of Austria, Slovakia, Hungary, Croatia, and Bulgaria.

Archaeological sites along Upper Moesian limes represented at all times enormous resource for a common work of scientists. Nowadays, they are offering huge cooperation potential for heritage professionals as well, one that should more benefit from.

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UTILIZATION OF BALED BIOMASS FOR ENERGY PURPOSES IN COUNTRIES OF DANUBE REGION

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Serbia consumes about 15 Mtoe per year (one million tons of oil equivalent-toe). At the same time it disposes with registered 4.3 Mtoe, annually, of RES (*Renewable Energy Sources*). RES implies energy obtained from natural resources such as: wind, geothermal potential, solar energy, small hydro power, and biomass. From the available RES reserves in Serbia, biomass accounts for ≈62%. Agricultural biomass represents ≈60% of total biomass potential, while the remaining amount of biomass reserves refers to forest biomass. The main part of the agricultural biomass comes from farming residues. Form of bales is the most common form for collecting that type of biomass. This means that biomass is the primary and most important potential, and farming residue in bales form, individually speaking, are the largest potential source of RES in Serbia.

On the registered balance of biomass we should add biomass, which was not included in the balance, and that can be grown in swampy near Danube, and other rivers in Danube region, or grown on derelict land for energy purposes.

The paper considers the possibility of using baled biomass for energy production in Serbia without disturbing balance in the human or animal food production.

Similar possibilities for baled biomass utilization certainly exist in all countries of the Danube region, especially those that border with Serbia, because of the similarity of their geographical (climatic) location, the terrain and the type of agricultural production.

The possibilities of utilization of bales originated from agricultural biomass residues were discussed in this article. However, the conclusions are valid for all biomass types collected in form of bales: some energy plants, remnants of vine and fruit trees pruning, as well as tree branches.

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COLLABORATION BETWEEN SERBIA, BULGARIA, ROMANIA AND HUNGARY IN ASTRONOMY

Serbian astronomers developed intensive collaboration in particular with Bulgarian astronomers. Eight Serbian-Bulgarian (when in Serbia) or Bulgarian-Serbian (when in Bulgaria) have been organized: 1998 in Belogradchik, 2000 Gamzigradska Banja, 2002 Giolechica, 2004 Belgrade, 2006 Sofia, 2008 Belgrade, 2010 Chepelare and 2012 Leskovac. These conferences were very useful for the development of mutual collaboration, planning of common investigations and joint projects, using the facilities of the National Astronomical Observatory Rozhen, equipped with 2-m RCC telescope and Belogradchik Observatory.

Three round tables of Romanian and Serbian astronomers were organized in Timisoara (1995), Belgrade (1996) and Cluj Napoca (1997), as well as the fourth Yugoslav-Romanian astronomical meeting in Belgrade (1998), resulting in closer relations and mutual invitations to other, more specialized conferences on various topics.

Also Serbian astronomers have contacts and collaboration with Hungarian astronomers in particular on Konkoly Observatory in Budapest, which existed even in 19th century (Milan Nedeljković (Tege Konkoly). Contacts were established also with astronomers in Debrecen, Baja, Szombathely and a Hungarian-Yugoslav astronomical conference was organized in Baja, 1995.

We will review the collaboration, joint activities and contacts of astronomers in Serbia, Bulgaria, Romania and Hungaria and possibilities for further development of collaboration in this region.

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WATER MANAGEMENT IN DANUBIAN COUNTRIES IN TRANSITION

Countries in middle and downstream reach of the Danube river basin has some common characteristics. Most of those countries are undergoing fundamental changes in the economic and political sphere (i.e. a transition process). Also, most of them have problems in the field of water management for various reasons. They are basically undergoing a transition to sustainable water management. In virtually all these countries heavy investment and considerable water sector adjustments are needed.

In general, Danubian countries in transition are moderately rich in water resources. It is important to note that there is an uneven distribution of well-watered and dry areas in the region; water resources generally decrease from the west to the east and from the north to the south.

It is likely that the situation will become even more complex in the future. According to most climate change predictions, the upward temperature gradient is expected to increase and, consequently, runoff and river discharges will likely decrease, as a result of natural processes and increasing water demand (particularly for irrigation/food production). It is expected that certain regions will become semi-arid and experience considerable water deficits.

Therefore, water awareness needs to be raised and the overall socio-economic system related to water improved through capacity and efficiency enhancements. The influence of global institutions needs to be adjusted to the specific needs of these countries.

In developing the right approach to water management improvement, particular care needs to be exercised to properly address the economic situation of a given country and its richness in water.

Additionally, the rate of socioeconomic changes in transition countries requires a highly specific approach to this issue, which needs to be taken into account at the global level by UNESCO and other international organizations, such as the World Bank and similar institutions.

The desirable strategy for transitional countries in Danube river basins includes:

- Popularization of thematic consideration of water sector issues (thematic conferences, enhancing local scientific capacities, contact with governments, etc.)
- Networking of research organizations and institutions of higher learning
- Networking of organizations engaged in monitoring of changes (standardization of methods, exchange of data and experience, regional, etc.)

- Advising advancement of national water funds and finding ways of ensuring their cooperation with international financial institutions
- Influence of global and regional institutions on local capacity building in the water sector

In Serbia, UNESCO Category II Center Water for Sustainable Development and Adaptation for Climate Change was established in 2013 at the Jaroslav Cerni Insistute for the Development of Water Resources and one of its main goals is to enable implementation of above mentioned strategy.

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ACANTHOCEPHALAN PARASITES OF FISHES IN BELGRADE SECTION OF THE DANUBE RIVER, SERBIA

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In this work, the aim is to present results of investigation of freshwater fish acanthocephalans in the Belgrade section of the Danube River. It has been also analyzed extensity and intensity of fish parasite infestation.

During complex ichthyoparayitological study implemented 2007 – 2009 It have been collected and examined 17 freshwater fish species from families Cyprinidae (12), Esocidae (1), Percidae (3) and Gadidae (1). In their intestine have been found 12 species of Acanthocephala. The most immanent species were *Pomphorhynchus laevis* (Müller, 1776) and species *Acanthocephalus lucii* (Müller, 1776). The number of fishes infected with *P. laevis* were varied from one to 62, while with parasite *A. lucii* were infected fishes in interval 1-19. Fish species who in their intestines have had a great number of parasitic species were bream and orfe (8), as well as whiteye bream, white bream and roach (5). The highest number of parasites in one fish specimen have been found in *Barbus barbus* (207 parasites).

Investigation of fish parasites biology and ecology has remarkable theoretical and practical meaning, especially when the targer is fish parasitofauna in open waters. The interesting issue is the role of endoparasites as a potential bioindicators of water quality. Parasites are useful bioindicator, especially these who have a strict host specify. Some of parasites may serve as sensitive indicators of pollution, providing a useful tool for the assessment of ecological conditions in aquatic habitats. The parasitic fauna of freshwater fish can play an important role in determining the long-term effects of organic and heavy metal pollution. Considering that Danube flows through numerous industrial and urban centers and receives significant amount of pollution. The river is a recipient of urban and industrial wastes as well as of agricultural land runoffs, using parasites as bioindicator may be a useful tool for water quality monitoring program.

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SOLAR ENERGY: POTENTIAL, POSSIBILITIES AND APPLICATION

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When strategy to boost the development of the Danube Region was proposed by the European Commission, few years back, environmental protection and sustainable utilization of natural resources was one of the main pillars EU strategy was based on.

Environmental pollution and global warming are the first to be mentioned among the problems that should be addressed during this century. The current trend of energy production and consumption in the world is not doing any good in addressing these problems and presents the main cause of the greenhouse effect, acid rain and other negative global and local impacts on health and the environment.

Aside from the aforementioned problem of environmental pollution, the dynamics of fossil fuel exploitation will lead to the exhaustion of their reserves in the near future. This presents an additional and even bigger incentive for increasing the share of renewable energy sources within global energy consumption. Humankind needs to establish ecological balance and implement fast transition from the non-renewable to renewable sources of energy.

As a solution to meet the growing demand for energy and reduction of environmental pollution, many governments were forced to promote, through corresponding subsidies, the construction of power plants that use renewable energy sources. This policy has led to the popularization and increasing share of renewable energy sources within overall electrical energy generation.

The aim of this paper is to review some key issues and prospects related to solar photovoltaic (PV) power engineering in countries of the Danube region. Speaking of these issues, three main groups of parameters are to be analysed: solar potential, solar market and the Government driven policy for renewable energy sources. Even though the first two of the above issues have an important role in the development of solar sector, Government policy is what makes solar energy prosperity of one country. This leads to some countries with great solar potential to have poorly developed solar energy sector comparing to more developed countries with much less potential.

Economic development and strengthening of regional cooperation and partnership in the Danube region can lead to development and utilization of solar energy.

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GENOTYPE FREQUENCIES OF PREGNANE X RECEPTOR (*PXR* 63396C→T) IN THE SERBIAN POPULATION

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Introduction:
Three polymorphisms (44477T>C *[rs1523130]*, 63396C>T *[rs2472677]*, and 69789A>G *[rs763645]*) within putative transcription factor binding sites of the pregnane X receptor (PXR; *NR1I2*) regulatory regions have been shown to influence CYP3A4 and/or ABCB1 expression and activity in hepatocytes and liver. The aim of this study was to identify genotype frequencies of *PXR* 63396C>T in the Serbian patient population.

Methods:
Whole blood samples was taken from HIV-infected patients at the The HIV/AIDS Center, Institute of Infectious and Tropical Disease "Dr Kosta Todorovic", School of Medicine, University of Belgrade. All subjects were unrelated Serbian Caucasians from Belgrade and Central Serbia. Ethical approval was granted and written consent was obtained from all patients. Genomic DNA was extracted from whole blood and quantified using standard methods. Genotyping for 63396C>T was carried out by PCR-based allelic discrimination at the Department of Molecular and Clinical Pharmacology, University of Liverpool, UK. Difference in genotype and allele frequencies in Serbian patients compared with other Caucasian populations was then assessed by chi square test.

Results:
A total of 79 Caucasians were included in the analysis. Of these, 79 patients (75.95%) were male, the median age was 40 years (IQR, 34 – 48 years), and the median body mass index was 23.1 (IQR, 21.0 – 24.5). 16 (20.3%) patients were homozygous for the C allele, 34 (43.0%) patients were heterozygous and 29 (36.7%) patients were homozygous for the T allele. There was no statistically significant difference between allele frequency

($p = 0.53$; OR = 1.1) for *PXR* 63396C>T frequency between the Serbian and previously reported Caucasian German patient populations (Wyen *et al*. *J Antimicrob Chemother*. 2011. 66(9):2092-8).

Conclusion:
Understanding differences in frequency between populations can contribute to the better understanding of molecular basis of the Serbian patient population in drug response.

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TEACHING MEDICAL COMMUNICATION TO IMPROVE THE CURRICULA OF MEDICAL STUDENTS AND THE PRACTICAL SKILLS

Introduction and aim
Medical communication is part of the health communication and remains the Cinderella of medical training in most Danubian countries. We want to present our activity in the field of teaching medical communication, in connection with the international communication with specialists from neighbored countries, enhancing the collaboration between Danubian countries.

Methods
Further to our previous communication during the Humboldt meeting in Belgrade few years ago, we will display new steps in the organization of the training of medical students and of other trainees in medical communication. We will also show the events organized in cooperation with colleagues from neighbored countries, many of them as well Humboldt research fellows.

Results
Since the last 5 years we introduced elective courses on medical communication for first year students in Romanian, English and French. We organized the first master degree programme in psychosomatic medicine from East Europe, including a course on medical communication. We organize meetings and international workshops on this topic, receiving the contribution for medical schools of Szeged, Sofia, Stara Zagora. It all started after a Humboldt Kolleg in Cluj in 2003 which lead to the founding of a CEEPUS network in psychosomatic medicine; from here we developed in teaching medical communication by using the experience of centers better trained in this activity. Our most recent meeting was an international workshop on communication held in Cluj, in March 2013.

Conclusion
Teaching medical communication is of paramount importance in the medical curricula and helps a better management of the patients. All medical students should follow training in this field.

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LOWER DANUBE VALLEY - STRUCTURE AND THE EVOLUTION ALONG THE ROMANIA-SERBIA BOUNDARY

The actual region of Romania-Serbia boundary had migrated since about 110 million years Before Present from the south. Nearing the edge of the Moesian Platform, the Trans-Danube Mountains underwent an unequal migration from the SSW toward the NNE, along a series of strike-slip faults (Poreć–Cerna–Jiu, Dževin–Balta–Targu Jiu a.o). The dynamic of basement units is mirrored in episodic occurrences of earthquakes. Slightly to the west of the Kladovo-Brezniţa Ocol striking lineament, earthquakes occur at the contact between the Getic Nappe and the next unit to the east. The most recent major earthquake, of 6.0 MCS magnitude and whose epicenter was situated at Kladovo, has occurred on 5 October 1908.

The Getic Nappe thrust over the Moesian Platform outcrops as a N–S striking lineament extending between Erghevita–Şimian. That over-thrust probably intersects farther to the south the Timok Fault. According to recent information, earthquakes having recently occurred on these composite faults, at Hinova commune (30-60 km focal solution, Mw = 2-3), at Rogova (20-30 km depth, Mw=2-3) and at Brza Palanka (on 01 06 2009, depth=5 km and Mw=2).

The precision levelling in order to investigate in deeper detail the crustal movement regime existing in the proximity of Iron Gate and Ostrovu Mare hydro power plants built on the Danube has confirmed the existence of present-day displacements. Stârmina Hill, located next to Hinova, in the south-western part of the Getic Piedmont is subject to an uplift movement amounting to about 4 mm/year, while the Blahniţa Plain substratum (in the region of the Ostrovu Mare hydro power plant) is sinking by 3.5 mm/year. To prevent future possible internal hazard, it needs continuing of actual Serbia and Romania' Programe of Crustal Movements monitoring.

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WATER QUALITY - BASIS FOR LIFE

Introduction. There is plenty of water on earth. But there are strong limitations on quality, region and time. Population growth, urbanization and climate change add additional stress on the specific water demand.

Emerging water pollutants. Historically the social economic development is reflected in the kind and concentrations of water pollutants. Pharmaceuticals, endocrine disruptors, colloids and Engineered Nano Particals (ENPs) have emerged and are of ecotoxicological and human toxicological concern. Identification, fate and bioeffects of the different pollutants have become a great challenge for water scientists. The development and application of powerful analytical methods have become a central point in the necessary investigations.

Water technology as problem solver. A way out of the problems caused by water pollution is water technology. There is a suite of classical treatment methods and of advanced processes. Elimination of water pollutants and high salt constituents can preferably be done by membranes. In addition Advanced Oxidation Processes (AOPs) and photocatalysis can lead to an efficient degradation of geogenic and/or anthropogenic organic pollutants and inorganic ones like arsenic as well. These methods can also be applied successfully to cope with microbiological contaminations.

Conclusion. Analytics, fate and elimination of water pollutants have grown to essential topics in water management and for a sustainable development.

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BELGRADE AT THE CONFLUENCE OF INFLUENCES

Belgrade and his position:
Belgrade is situated in South-Eastern Europe, on the Balkan Peninsula. It lies at the point where the river Sava merges into the Danube, on the slope between two alluvial planes. The river waters surround it from three sides, and that is why since ancient times it has been the guardian of river passages. Because of its position it was properly called "the gate" of the Balkans, and "the door" to Central Europe.

Belgrade on Danube's way:
Danube is a river in Central Europe, the continent's second longest after the Volga. As an international waterway, it originates in the town of Donaueschingen .The Danube then flows southeast for 2,872 km, passing through four Central European capitals before emptying into the Black Sea via the Danube Delta in Romania and Ukraine. Belgrade lies somewhere at the half way, exposed as an old citadel above and throughout history as a guardian, playing important historical role both, in European history and cultural heritage.

As a city, he was spreading through time from this, central fortified core, and has not been developed continuously over the course of its long history. Applied defence systems from various periods, emerging on the remnants of older fortifications. Taking surrounding hills and river banks in a new history, emerging from a swamp at the beginning at the XX Century, forming a new city on the opposite side of an old Kalemegdan citadel, New Belgrade, it became important and modern architectural mark. However, he remain partly distant from its rivers, somehow neglecting the importance and possibilities for developing a new city incorporated in existing core with different functions and forms.

Linking Belgrade with:
Ingolstadt, Regensburgh, Linz, Vienna, Bratislava, Budapest, considering importance of architecture systems and modern architecture approach comparing it to Belgrade position, needs and possibilities throughout examples.

Conclusion:
Possibilities for future development throughout a scope of project for Belgrade river banks and linkage with central district area. Daniel Libeskind Belgrade port visions, Sou Fujomoto architects Belgrade "cloud", new Belgrade Center for Promotion of Science by Wolfgang Tschappeler, Contemporay art museum reconstruction etc.

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SCIENTIFIC AND EDUCATIONAL COOPERATION BETWEEN GERMANY AND SERBIA IN THE FIELD OF ENVIRONMENTAL PROTECTION

There is long tradition in scientific and educational cooperation between Germany and Serbia. The development of natural sciences, agriculture and forest science in Serbia are based on education of teaching staff and exchange with Albert-Ludwigs- Universität Freiburg, Universität of Göttingen, University of Hamburg, University of Hohenheim, Humboldt-Universität zu Berlin, Ludwig-Maximillians Universität München, Techniche Universät München, Technische Universität Dresden, University of Würtzburg and other. German Exchange Service supported scientific and educational cooperation.

Recognizing the need for exchange and cooperation, University of Belgrade Faculty of Forestry and Albert-Ludwig- Universität Freiburg, Institute for Landscape Management, Faculty of Forest and Environmental Sciences signed Memorandum of Understanding. Employ of the Faculty of Forestry participated in the project "EU-Teach Project - Implementation of European relevant teaching contents in the studies of landscape architect", conducted by University of Applied Science, Faculty of Landscape Architecture Weihenstephan-Triesdorf, Freising.

Mutual exchange of undergraduate, graduate students and Postdocs on Forestry, Landscape Architecture, Biology and Agriculture has been organized. Students did their practical work and research in Germany and Serbia successfully.

In the frame of environmental research, Institute for Biological Research "Dr.Sinisa Stankovic" from Belgrade has established a successful cooperation with following institutions in Germany: Universität Göttingen, Centre for Environmental Research Leipzig-Halle, GOBIO GmbH - Institute for Ecology of Waters and Applied Biology in Hessen. The research on insect agro biodiversity in South-eastern Europe has been conducted by Faculty of Science in Belgrade and it was done together with research partners from Germany.

Up to now there was not sufficient mutual cooperation between Germany and Serbia. However, there is need to exceed and improve scientific and educational cooperation between two countries, especially in the field of environmental protection. Cooperation in the areas of teaching, exchange, development, research and community services would be favourable.

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THE BENEFICIAL EFFECTS OF PLANT POLYPHENOLS ON HUMAN HEALTH

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The World Health Organization has confirmed that the mortality from cardiovascular diseases is significantly lower in France, when compared to other developed countries, although the existence of coronary diseases risk factors is the same (*French paradox*). This has been explained by the moderate consumption of red wine with meals. Many studies have shown that different plant polyphenols are the substances responsible for the cardioprotective effects of red wine. Besides to their vasodilatatory effects, polyphenols are potent antioxidant agents that reduces atherosclerosis. It also has anti-inflammatory, analgesic and anticancer effect, slow down the progress of Alzheimer's disease and aging process through activation of "longevity" genes. Resveratrol, *trans*-3,5,4'-trihydroxy stilbene is a naturally occurring phytoalexin present in many different types of nutrients which we consume on daily basis. However, the most important source of resveratrol is grape skin. In our research study we will investigate grape sorts *Vitis Vinifera*, which contain the highest resveratrol levels in the cuticle of grape and seeds. Since this substance is synthesized in response to a fungal infection with the gray mould *Botrytis cinerea*, we will collect grape specimens of different phytosanitary conditions. This fungus is generally present in vineyards with humid climate. We investigate the influence of primary processing, way of vinification, influence of yeasts and enzymes of different glycosidase activity, various treatments (pasteurization, clearing) on resveratrol concentration. The quantification of resveratrol in wine samples will be achieved through the method of liquid chromatography with UV detection. Since the cardioprotective effect is not uniform for all wine types, it is of great importance to perform preclinical pharmacodynamic analysis of high quality wines rich in resveratrol on Medical faculties in Belgrade by comparing them to standard ones and to synthesized resveratrol substance. Vasodilatory and antioxidant effects of wine specimens were examined on the isolated rat and human blood vessels and uterus, by using pharmacological and immunohistochemical methods**.** Also, we investigated the influence of different newly developed dietary product from red wine on the cardiovascular function (blood pressure and heart rate) of normal and diabetic rats. In clinical investigation, the effects of recommended dose of red wine (1-2 glass per day) on the cardiovascular function of healthy voluntaries were analyzed. Our research gave the evidences that resveratrol presented in the red wine is responsible for its beneficial effects on human health.

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DIE AKTUALISIERUNG VON „ROBERT MUSILS „KAKANIEN“ IM HEUTIGEN (MITTEL)-EUROPÄISCHEN KONTEXT“

Von allen Werken der Klassischen Moderne Österreichs bietet Robert Musils Roman *Der Mann ohne Eigenschaften* die umfassendste, ironisch-satirische Darstellung und konstruktiv-kritische Analyse der habsburgischen und mit ihr der gesamteuropäischen Moderne vor dem Ersten Weltkrieg. „*Kak*anien“ – dieser schillernde, nostalgische und zugleich utopische Name, den Musil dem untergegangenen, komplizierten Staatsgebilde der *k*. u. *k*. Monarchie verliehen hat, das heißt der *k*aiserlich-*k*öniglichen, österreichisch-ungarischen Doppelmonarchie, dieses *Kak*anien ist in der kulturellen Öffentlichkeit nicht nur Österreichs, sondern ganz Europas längst zum geflügelten Wort geworden. Der Begriff „Kakanien“ eignet sich vorzüglich als Signatur für das mitteleuropäische Spannungsfeld von Literatur und Politik auch im verallgemeinernden Ausgriff auf die Zukunft bis in unsere unmittelbare mitteleuropäische Gegenwart. Demgemäß heißt es in einer Arbeitsnotiz Musils: „Österr.[eich] als besonders deutlicher Fall der modernen Welt.“ Eine ähnliche Definition findet sich einige Jahre später bei Musils geistesverwandtem Rivalen Hermann Broch, der das das altösterreichische Staatsgebilde infolge seiner „besonders schwierigen Verhältnisse“ als „ein gewissermaßen verschärftes, wenn auch verkleinertes Bild der gesamten ökonomischen und sozialen Weltsituation“ bezeichnete. Es geht um die Frage, inwieweit sich die nostalgische Utopie von Musils „Kakanien“ gegenwärtig und zukünftig in (Mittel-Europa) noch politisch aktualisieren lässt, ob das kleine heutige Österreich durch seine geopolitische Lage einen geschichtlichen Beitrag leisten kann zu dem nach dem Ersten und nach dem Zweiten Weltkrieg aus der politischen Landkarte scheinbar endgültig gestrichenen Begriff „Mitteleuropa“, der gegen Ende des 20. Jahrhunderts durch den Zusammenbruch des kommunistischen Machtblocks und die nachfolgende Osterweiterung der Europäischen Union eine bemerkenswerte, vieldiskutierte Renaissance erfuhr, ob Österreich auf der kulturellen Basis von Musils „Kakanien“ in selbstbewusster Bescheidenheit an der Fortsetzung dieser großen mittel- bzw. zentraleuropäischen „Erzählung“ mitwirken kann.

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PHARMACOLOGY IN EUROPE

Pharmacology, defined as the science of drug action, was established in Europe as a unique discipline in the middle of the 19th century when a number of chairs and institutes were founded in several European universities. The concept of clinical pharmacology as a discipline distinct from clinical medicine, especially as a science systematically investigating the mechanistic basis of drug action in humans, can also be traced back to this century. By today, pharmacology has developed into a surprisingly diverse scientific field, incorporating techniques and research focuses traditionally associated with other disciplines such as physiology and pathophysiology, biochemistry, electrophysiology, molecular biology, genetics, bioinformatics and statistics.

This breadth of the scientific field certainly constitutes one of the major strength of the discipline but at the same time has proven to be a serious threat to its survival today. The legitimate demand for increased cooperation between different scientific disciplines has resulted in the merging of traditional university departments into larger scientific centers in numerous universities in several European countries. In many of these, no notion of pharmacology has remained in terms of department identification, occupational titles or, most important, course descriptions in curricula of medicine or pharmacy.

Only very few countries seems to acknowledge pharmacology as a specialisation in terms of an independent occupation. For example, Germany and Austria recognize pharmacology as a specialisation in the field of medicine, including explicit rules for training and exams for obtaining the occupational title of ‘specialist in pharmacology’. Few scientific societies of pharmacology in Europe have tried to provide systematic regulations for diplomas for pharmacologists.

The Federation of European Pharmacological Societies (EPHAR), the umbrella organization for national academic societies representing the field of pharmacology in Europe, was founded in 1990 by six member societies it now represents 27 European countries. In order to strengthen the impact of pharmacology as a discipline and of pharmacologists as individuals being experts in this field EPHAR has launched a plan to establish a European certificate for pharmacologists who have undergone a formal training in this discipline. This certificate will be based on the principles formulated by the European Common Framework for Continuing Professional Development in the Biomedical Sciences which is part of the EU Innovative Medicine Initiative.

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DANUBE LOESS – THE BEST PRESERVED EUROPEAN TERRESTRIAL RECORD OF CLIMATIC AND ENVIRONMENTAL CHANGES DURING THE LAST ONE MILLION YEARS

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The Danube river drainage basin is a significant and extensive 200,000 km^2 loess region and covers wide ranging modern and past environments. Indeed, the Danube River may itself be responsible for the transportation of large volumes of silt that ultimately form loess. European loess research started in the last decade of 17th century with investigations of Count Luigi Ferdinand Marsigli in the Danube Basin. Since that time numerous investigations have provided the basis for the framework used by Kukla in his celebrated correlations of loess sediments with deep-sea sediments. These crucial stratigraphic advances demonstrated the enormous paleoenvironmetal and paleoclimatic significance of the Danubian loess deposits. Loess-paleosol sequences in the middle and lower reaches of the Danube river basin contain some of the longest and most complete continental climate records in Europe covering approximately the last million years.

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IMPACT OF CLIMATE CHANGE TO EUROPEAN ECOSYSTEMS – THE EXAMPLE OF FOREST ECOSYSTEMS

The paper deals with the effects of Climate Change to ecosystems in Europe using the example of forests. Major trends to forests in Europe under the influence of Climate Change are discussed including an increase of abtioc and biotic disturbances, changing temperature and precipitation regimes, and a potential increase of the net primary productivity.

The paper shows how biome shifts of major tree species in Europe (including the Danube region), are modelled based on a large database of presence/absence of tree species in Europe and what the economic effects of these changes in distribution are. Major results of the modelling are that a decrease of mesic, cold-adapted species such as Norway spruce (Picea abies, Karst) has to be expected and that drought-adapted species such as Mediterranean oaks will increase their growing areas. This will have strong effects on the value of European forest land and the European timber industry. The paper concludes with adaptive capacity of forests and general adaptation strategies showing that – in order to deal with complex decision problems of Climate Change – risk and biome shift models should be included in forest management models.

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ASTROMUNDUS, ERASMUS MUNDUS COOPERATION OF DANUBIAN COUNTRIES: GERMANY, AUSTRIA AND SERBIA

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AstroMundus is a 2-years Erasmus Mundus Masters Course (120 ECTS) in Astrophysics based on the expertise of the professors and scientists of the Danubian countries: Germany, Austria and Serbia.

The programme is offered by a consortium of 5 partner universities: Universities of Innsbruck, Padova, Roma, and Göttingen, and the University of Belgrade as a Third Country partner. Its main objective is to provide top-ranked students with an excellent background in Astrophysics, to introduce them to the world of modern astrophysical research, and foster their future career in this field. At the same time, in the spirit of the Erasmus Mundus programmes, we promote cultural exchanges between students and academics of different countries. The Master is closely related with other institutions such as e.g. Astronomical Observatory Belgrade in Serbia.

AstroMundus students carry out their master studies in at least two and up to four of these countries, in a stimulating and scientifically excellent international environment. The official language of the course is English, but students are given the possibility to learn the languages of the host countries, e.g. German or Serbian language. Successful students are awarded with the Joint Master Degree by all partner universities they have visited during this Master studies, and with the Diploma Supplement to facilitate the recognition of their degree in other universities/countries. This school year (2012/2013) the Third Edition students have started the AstroMundus master course, while the First Edition students have successfully graduated in September 2012.

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ORGANIC POLLUTANTS IN WATER-CHALLENGES AND OPPORTUNITIES

Organic xenobiotics are used as pesticides, industrial chemicals, flame retardants, cosmetics, personal care products, pharmaceuticals, dyes, UV protection products. During the last decade it was shown that some of them may be present at ppb and ppt range in both drinking water sources and tap water. Insufficiently treated waste waters, waste and pesticide use present the main sources of pollution of ground and surface waters. Pollutants are transformed by physical, chemical and microbiological processes, while by-products can also be rather toxic. The effects of low concentrations (order of ppb and ppt) are still unknown for majority of substances and the long term subtle effects to aquatic species are worrying. High diversity causes lack of knowledge and understanding of behaviour in ecosystems and water treatment processes. Low concentrations in water or mixtures challenge the researchers in several aspects a) analytical b) toxicity assessment and c) efficient removal in water treatment. Only 75% of 41 hazardous substances regulated in EU can be reliably measured. For some of them, the analytical difficulties have been recorded, while particular challenge comes from identification of basin specific pollutants which are subject of future monitoring. As there is growing evidence that priority pollutants rarely present key toxic pollutants more knowledge is needed in this respect. Some of those pollutants pass various barriers (soil and sediment, partially wastewater treatment plants). Special interest should be given to polar compounds in that respect. Removal efficiencies of different micropollutants for various drinking water treatment processes were reported recently. Lack of fundamental knowledge exists in respect to their interactions with process materials which is important for the optimization of processes and technologies. It is quite often that water treatment starts with bank filtration that influences both quality and quantity of remaining pollutants. Sand filtration and coagulation show certain potential as well. Activated carbon adsorption is the most efficient, while membrane filtration potential is high related to nanofiltration and reverse osmosis. Efficiency of ultrafiltration and microfiltration exists only if applied together with activated carbon in hybrid processes. Destructive processes like oxidation or microbiological degradation in most cases yield in new compounds without complete knowledge on their identities and possible effects. In Danube region we still have the release of untreated effluents from either municipal or industrial facilities that have not yet enjoyed the levels of investment in environmentally friendly technologies that are now common-place across the EU. Chemical pollution that can have a long term negative influence on shared water resources, represents a significant risk and at the same time both opportunity and challenge for joint research and work of the countries.

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RECHTSHISTORISCHE WURZELN DES EUROPÄISCHEN PRIVATRECHTS: WISSENSCHAFTLICHE ZUSAMMENARBEIT UND NACHWUCHSFÖRDERUNG IM INTERNATIONALEN NETZWERK

Geschichte und Rechtsgeschichte bildeten schon immer starke Bindungen und Verbindungen, die im Donau-Raum zur nationalen Identität und internationalen Vernetzung der Völker Wesentliches beigetragen haben. Die allgemeinen Werte in der Juristenausbildung bauen seit Jahrhunderten auf historische Wurzeln, die im Laufe der (Rechts)Geschichte immer wieder betont wurden. Es reicht hier, auf die Gedanken von William Blackstone hinzuweisen, der sein epochales Werk, die Commentaries on the Laws of England, seinen Lesern mit der folgenden Empfehlung überreichte:

„For I think it an undeniable position, that a competent knowledge of the laws of that society, in which we live, is the proper accomplishment of every gentleman and scholar, and highly useful, I had almost said essential, part of liberal and polite education. And in this I am warranted by the example of ancient Rome, where, as Cicero informe us, the very boys were obliged to learn the Twelwe Tables by heart, as a *carmen necessarium* or indispensable lesson, to imprint on their tender minds an early knowledge of the laws and constitutions of their community."

Was galt für England, galt noch mehr für die europäische Rechtsentwicklung. Die historischen Wurzeln der modernen privatrechtlichen Dogmatik reichen bis zu der Antike zurück. Der Mangel am geschichtlichen Verständnis könnte die gesetzgeberischen, aber auch die politischen Entwicklungen des modernen Europa zum Scheitern bringen.

Diese und ähnliche weitere Überlegungen haben vor sechzehn Jahren den Grundstein für eine fruchtbare Zusammenarbeit in Mittel- und Südosteuropa gelegt, die seitdem ohne Unterbrechung, im Rahmen von jährlichen internationalen Seminaren und Gastvorträgen, mit kraftvoller Unterstützung mehrerer Deutscher Universitäten weitergeführt wird.

Der Beitrag will die Zielsetzungen und Ergebnisse dieser Kooperation kurz vorstellen, um damit eventuell zur Überlegung neuer Projekte anzuregen.

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STURGEON CONSERVATION AND MANAGEMENT COOPERATION IN THE DANUBE RIVER BASIN

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Sturgeons represent the most endangered group of fish species in the Danube River Basin. During the twentieth century, populations of beluga (*Huso huso*), Russian sturgeon (*Acipenser gueldenstaedtii*), stellate sturgeon (*A. stellatus*) and ship sturgeon (*A. nudiventris*) have experienced a severe decline in the Danube, while the European sturgeon (*A. sturio*) became extinct. Sterlet (*A. ruthenus*) is the only sturgeon species that is still an object of commercial fishery. Habitat fragmentation by dams, unsustainable and illegal fishery, loss of suitable habitat and pollution represent the major negative impacts. However, all impacts have been further exacerbated in the past by a lack of cooperation among countries from the Danube River Basin on the establishment of a common management strategy and activities, which was to an extent caused by a complex socioeconomic and political situation in the region. Over the last few decades, there has been a substantial improvement of communication and cooperation among the countries in the Danube region regarding sturgeon protection and management, partly due to a period of sociopolitical transition in the Lower and Middle Danube countries. The Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has established sturgeon catch quotas and reporting for each country, and initiated establishment of the Black Sea Sturgeon Management Action Group (BSSMAG) in 2001, as well as the development of the "Regional Strategy for the Conservation and Sustainable Management of Sturgeon Populations of the NW Black Sea and Lower Danube River in accordance with CITES" in 2003. In 2006, International Association of Danube Research (IAD) and the World Wide Fund for Nature (WWF) have supervised the development of the "Action Plan for the conservation of Sturgeons (Acipenseridae) in the Danube River Basin". All activities were also supported by the International Commission for the Protection of the Danube River (ICPDR). The latest regional initiative was the establishment of the Danube Sturgeon Task Force (DSTF), as an international cooperation, communication, public awareness improvement and lobbying body, established within the frame of the EU Strategy for the Danube Region. Significant contribution to the efficiency of this process was provided by the intensified cooperation between the Lower Danube countries (Serbia, Romania, Bulgaria and Ukraine) and the Upper Danube countries, primarily Austria and Germany.

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JAGIELLONIAN UNIVERSITY IN CRACOW AND ITS EXPERIENCES IN IMPLEMENTATION OF BOLOGNA REGULATIONS

The Bologna Process was initiated in 1999 when ministers responsible for higher education from 29 European countries signed the document called the Bologna Declaration. The goals of the Bologna Process include changes in European higher education systems and creation of the European Higher Education Area by the year 2010. The changes are increasingly often viewed as an element of a wider process leading, in particular, to creation of the European Research Area and aiming to realize a vision of Europe of Knowledge. Actually, these are political initiatives, widely, however, supported by academic communities and implemented at institutions of higher education. This is just an attempt to elaborate a "common" European reaction to global competition problems, especially in relation to the present giants of science, like the USA and Japan. At present, 46 countries cooperate to realize the Bologna Process.

Poland belongs to the signatories of the Bologna Declaration and actively participates in creation of the European Higher Education Area. This article presents achievements and experiences of one of the "oldest" in Europe Jagiellonian University (founded in 1364) in this field and discusses some related problems.

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COMPARATIVE STUDY OF HUMAN ESTROGEN RECEPTOR ALPHA STRUCTURAL COMPLEXES FOR THE PURPOSES OF VIRTUAL LIGAND SCREENING

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The human estrogen receptor alpha (ERα) is the dominant receptor regulating normal mammalian development. It mediates estrogen signaling in reproductive and non-reproductive tissues and is expressed in the brain, lung, uterus, breast, heart, and intestine. In the past two decades, there is an increasing concern about the potentially adverse effects of exogenous endocrine active substances. The mechanisms by which these substances may elicit adverse effects often involve direct binding to ERα. Thus, ERα appears an important target for *in silico* screening of proestrogenic and antiestrogenic activities of exogenous chemical substances. In this study we focused on a detailed analysis of the ERα structural complexes for the purposes of the virtual ligand screening (VLS). We extracted the human ERα X-ray complexes available in Protein Data Bank (http://www.rcsb.org) and subjected them to a profound analysis including identification of the pharmacophoric and steric properties of ERα agonists and antagonists, characterization of their binding pockets in relation to volumes, geometries and key interacting residues. Next, we applied the software package AMMOS_ProtLig developed by us previously, to explore the role of protein flexibility on the ligand-receptor interactions in the ERα complexes. Our results could help in selecting appropriate target ERα structures, in developing rules for preliminary filtering and performing effective VLS of compounds with potential ERα proestrogenic or antiestrogenic activity.

The authors thank the National Science Fund of Bulgaria (grant No DTK 02/58) for the financial support.

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OIL POLLUTION IN DANUBE REGION (SERBIA)

Danube, as an international navigable river, is exposed to various pollutants and contaminating substances, particularly those originating from petroleum plants, involving, in the first place, petroleum-type pollutants.

The introductory part of this report shall offer an overall explanation of how petroleum, as a very complex mixture of different hydrocarbons, reaches the underground and surface waters, and what is its fate in such environments.

In the coastal parts of the River Danube, belonging to the territory of Serbia, a number of petroleum plants have been built, including the refineries in Pančevo and Novi Sad. The mentioned coastal parts consist mainly of alluvial formations whose underground waters are connected with Danube. The direction of the flow of underground waters depends on their level. The flow direction of underground water petroleum contaminants is defined in the same way. In the case that underground water level decreases underground waters of the alluvion are flowing in the direction of Danube. In this way petroleum contaminants are transferred from petroleum plant zones into the river. Thus, the petroleum plant regions are purified in a natural way, but, at the same time, Danube in this case, is polluted. On the other hand, during the period when the level of Danube rises, a new quantity of water reaches the alluvion, and the level of underground waters rises as well. This process is consistent.

Bearing in mind such an intense interaction between the Danube surface waters and the underground waters originating from alluvial formation petroleum plants, makes absolutely necessary a permanent control of the ecological status of underground waters, aimed at lowering their contamination levels. Thanks to its size, Danube may be included into the group of rivers with high self-purification potential. However, this fact should not be an excuse for its pollution, particularly with hardly degradable petroleum contaminants.

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WINE: SYMBOLIC AND REAL SIGNIFICANCE

Vine existed on the Earth before human beings appeared, therefore wine was something familiar to them from the very beginning. Even before the Ancient period many nations had their own wine gods, but only through the image of Dionysus wine obtains its full affirmation and strong symbolic significance. With appearance of the Savior - Lord Jesus Christ, and the New Testament wine assumes a new meaning. It becomes the symbol of Christ's blood shed in salvation of the mankind and as such it is irreplaceable in the Holy Communion (The Eucharist). It is being provided lately, on scientific basis, that due to its pharmacodynamic and psychogenic effects wine has a beneficial influence on health. With this, the millennium empiric knowledge, stated in numerous aphorisms and maxims, acquires a complete scientific confirmation.

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TRACE ELEMENTS IN RECENT SEDIMENTS OF THE DANUBE RIVER IN EASTERN SERBIA AND ENVIRONMENTAL IMPACT

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In order to establish geoecological characteristics of the Danube river in eastern Serbia, geochemical and sedimentological analyses of recent sediments were made. The following localities were chosen: Brnjica river, Silver Lake, Poreč (two points) and Orlova. In these 5 localities 31 sample was taken for laboratory analyses. Granulometric, chemical, X-ray and optical analyses were used for determination of textural, mineralogical and geochemical characteristics of recent sediments. In 12 samples from all studied sites were analyzed: bulk chemical composition, content of 45 trace elements, $CaCO_3$ (calcimetry), CaO and MgO, organic matter, total and soluble Fe. Complete silicate and trace elements analyses of the same samples were done at ACME Laboratory in Canada.

The following ranges of content of important trace elements were determined (in ppm): Ni 26-84, Co 14-23, V 70-117, Cu 18-194, Pb 13-153, Zn 38-600, Cd 0.1-5.6, Hg 0.02-1.35, As 4-30, Th 8-14, U 2.2-4.2, Rb 67-115, Cs 2-9, Be 1-4, Sr 138-205, Ba 369-536, Mo 0.3-2.0, W 1.1-3.4, Tl 0.1-0.5, Sb 0.1-1.8, Bi 0.1-1.8, Ag 0.1-1.0, Au (ppb) 1.0-29.2. Sediments from Orlova showed the highest contents of heavy metals, while those from Poreč – the lowest ones. Vertical distribution and origin of trace elements in the studied sediments and environmental influence will be discussed.

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CORRELATION OF HISTOPATHOLOGIC DEGREES OF ATHEROSCLEROSIS WITH CLINICAL CORONARY SYNDROMES

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There are 8 (I →VIII) degrees of coronary morphologic (histopathologic and cytologic) atherosclerotic (ath.) lesions. They correlate with distinct clinical coronary syndromes as follow (1. – 11.; pm – pathomorphol., ccs – clin. cor. syndr.):

1.pm**: I (Endothelial dysfunction. Focal pathologic intimal thickening. Foam cells - fatty dots and streaks), II (intimal xanthoma), III (preatheroma).** Primum movens of atherosclerosis: endothelial dysfunction (functional or organic – up to the denudation of endothelial layer). Monocyte (phagocyte) + vascular smooth muscle cell (vsmc) + dendritic cell → foam cell in the intima. Focal intimal thickening by vsmc. Glagov's phenomenon – initial centripetal compensatory enlargement of ath. coronary artery with preservation of lumen. **IV (lipid ath. plaque – fibroatheroma, "parit"), VII (fibrous cup calcification), VIII (fibro-sclerotic ath. plaque)** with lumen narrowing up to 75%.

ccs: **SILENT CORONARY ATHEROSCLEROSIS**

2.pm: IV, VII, VIII with lumen narrowing more than 75%.

ccs: **STABLE ANGINA PECTORIS**

3.pm: Coronary arterial spasm: intraluminal protrusion of endothelial cells, greater winding of internal elastic lamina, "thicker" muscular media → lumen narrowing.

ccs: **PRINZMETAL (VARIANT) ANGINA PECTORIS**

4.pm: **V (Destabilization of lipid ath. plaque by inflammation, hemorrhage, etc. Thin fibrous cup fibroatheroma), VI (fibrous cup defects: endothelial desquamation, erosion, fissure, rupture)** + secondary nonobsructive labile thrombus.

ccs: **NONSTABLE ANGINA PECTORIS**

5.pm: V, VI. The same lesions as in nonstable angina pectoris but more severe and with some cardiomyocytes necrosis and releasing of troponine.

ccs: **ACUTE MYOCARDIAL INFARCTION WITHOUT S -T ELEVATION (N STEMI)**

6.pm: V,VI. Destabilisation of lipid ath. plaque with defects of its fibrous cup (erosion, fissure and more often rupture) + secondary total lumen obstruction by stable thrombus.

Stop of distal circulation – coagulative necrosis (infarction) of the corresponding myocardium.

ccs: **ACUTE MYOCARDIAL INFARCTION WITH S -T ELEVATION (STEMI)**

7.pm: Usually subendocardial "red" myocardial infarction because of confluent hemorrhage within the infarction area. Interstitial hemorrhage and contraction band necrosis. "No reflow phenomenon" in microcirculation because of endothelial swelling and distal thrombotic embolisation.

ccs: **RECANALIZATION AND REPERFUSION OF THE OBSTRUCTIVE CORONARY ARTERY AFTER THE ESTABLISHMENT OF MYOCARDIAL INFARCTION**

8.pm: Changing of thickness and elasticity of left ventricle (LV) walls. Dilatation of LV with changing in its geometry (from normal "American football ball" to pathologic "basket ball"). Greater distance between LV papillary muscles and interpapillary (coaptation) angle more than 60°→ ischemic mitral regurgitation.

ccs: **POSTINFARCTION REMODELING OF LEFT VENTRICLE**

9.pm: VII, VIII. Chronic ischemic multivessels ath. lesions with acutisation. Postinfarction scars and new infarctions. Acute coronary and mural thrombi. Endocardial fibrosis. Acute or chronic postinfarction LV aneurysms. LV dilatation.

ccs: **CHRONIC ISCHEMIC CORONARY HEART DISEASE (ISCHEMIC CARDIOMYOPATHY)**

10.pm: VII, VIII. Heart failure - end stage of LV postinfarction remodeling and ischemic cardiomyopathy (70% of all cases of heart failure).

ccs: **ISCHEMIC CARDIOMYOPATHY WITH HEART FAILURE**

11.pm: Ischemic myocardium. In some patients the ischemic myocardium is especially prone to arrythmias. Spasm coupling by poor collateral arteries.

ccs: **ARRYTHMIAS → LV FIBRILLATION → SUDDEN ISCHEMIC HEART DEATH**

C O N C L U S I O N S

1. The histopathologic classification of coronary atherosclerotic lesions in I – VIII degrees (Stary et al., Virmani et al., AHA Committee on Vascular Lesions, Kanjuh) is in good and practical correlation with clinical syndromes of coronary atherothrombosis.
2. The classification is very useful for collaboration between cardiologists and cardiopathologists.
3. The statement on autopsy by the anatomist and first pathologist Giambattista Morgagni (1682 – 1771): "Physicians who are not themselves dealing with the very often depressing findings of autopsy material are floating in the clouds of an uncontrolled optimism" is still of great value for medicine.

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LIMITATIONS OF PRESENT LEGAL FRAMEWORK AND INCENTIVES FOR THE PRODUCTION AND EXPLOITATION OF BIOFUELS IN SERBIA

In 2006 Serbia ratified the South-East European (SEE) Energy Community Treaty, which exists between EU and the countries of SEE, therefore accepting the obligation to apply Directive 2003/30/EC which promotes utilization of biofuels and other RES-based fuels in transportation sector. Serbia was obliged to draw up a plan for the practical implementation of this directive by mid 2007. The aim of this study is to give insight into the goals, instruments and planned measures of the Serbian Government in the field of renewable energy sources (RES), particularly the biofuels. The method is based on an overview and analysis of adopted laws and regulations and other official documents. The results have revealed that progress has been made in this field in recent years. Midterm targets for the proportion of biofuels in overall fuel consumption in the transportation sector have been defined; some incentives have been adopted; legislative and socio-economic barriers of increased exploitation of biofuels have been analyzed and measures and activities were suggested for their solution. The existing legislation, however, is imprecise and incomplete. The biofuel targets are not synchronized between various strategic and program documents. Numerous bylaws, technical standards and guidelines are still outstanding. The key RES-related documents are inconsistent, lack clarity and are insufficiently decisive when implementing specific measures of incentives for production of RES based energy. Based on the review of national legislatives of countries with significant biofuel production recommendations are made to improve the current Serbian legislatives.

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RECENT ONCOPHARMACOLOGICAL RESEARCH ACTIVITIES AS BASIC FOR DRUG DEVELOPMENT

Oncopharmacology is a very fast developing area of human knowledge nowadays. It remains clear that malignant tumors can be converted into chronic diseases that respond to a wide variety of new drugs. The pharmacological progress is based on detailed investigations of the molecular mechanisms of carcinogenesis and disease progression. Therefore different methods for cell isolation, cell line establishment and cell culture techniques are reviewed. Main features of primary cell cultures and continuous cell lines are highlighted and discussed. Cell viability determination methods such as MTT-dye reduction assay and DNA-labeling and their informative value for the pharmacological research are described. The clinical and drug response significance of some important key elements of the cellular signal transduction in malignant cells such as WT-1, NF-kB, FLT3-ITD, Bcl-2 etc. are elucidated in leukemia and lymphoma continuous cell lines and samples from patients with leukemia. Nuclear factor – kB (NF-kB) is a transcription factor that plays crucial roles in inflammation, immunity, cell proliferation and apoptosis. Curcumin is a natural compound with NF-kB inhibiting properties that might be therapeutically used for leukemia, lymphoma and urinary bladder carcinoma. Recent research activities are focused also on alkylphosphocholines (erufosine and miltefosine), natural compounds (curcumin, gerisan and justicidine B), new metal complexes (platinum and ruthenium) and the unusual alkylator bendamustine. Important signaling cascades, which are mainly growth promoting and apoptosis inhibiting were followed. Oligonucleosomal DNA fragmentation, PARP cleavage and caspase activation are used as hallmarks of induced programmed cell death (apoptosis). In addition, the role of autophagy has been evaluated in some experimental schedules.

In the last decade we found strong evidence for the pharmacological activity of erufosine, miltefosine, curcumin, justicidine B and bendamustine as strong inducers of malignant cell apoptosis and elimination.

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ANTINEOPLASTIC ACTIVITY OF THE NATURAL COMPOUNDS CURCUMIN AND GERISAN

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The unfavorable safety profile of existing chemotherapeutics and the issue of drug resistance have fuelled the search for novel plant compounds as potential anti-cancer agents. One of the possible approaches for identifying perspective drug candidates is based on ethnopharmacology. Curcumin and gerisan are well tolerated non-toxic food additives within the EU. Curcumin is isolated from the rhizome of *Curcuma longa* L. It has been reported as NF-κB inhibitor and inductor of apoptosis, which possesses antioxidative, cholesterol lowering, anti-inflammatory, anti-parasitic, antibacterial, and antitumor activity. Gerisan is extracted from the rhizome of *Geranium sanguineum* L. It contains a complex of polyphenols and has effects on immune system, hematopoiesis, hemoglobin levels and blood pressure.

Our study aimed to assess the antineoplastic activity of curcumin and gerisan in a panel of malignant lymphoma, leukemia and urinary bladder cancer cell lines. Combinations of gerisan with antineoplastic drugs (cisplatin and epirubicine) were also evaluated. The panel of cell lines included: HD-MY-Z, DOHH-2, REH, HH, HuT-78, MJ, MyLa CD4+, MyLa CD8+, RPMI-8226, OPM-2, U-266, SKW-3, BV-173, HL-60, HL-60/Dox and BC-3C, T-24. Cytotoxicity was determined by the MTT assay and oligonucleosomal DNA fragmentation was detected by ELISA. Signal transduction changes were analyzed by Western blotting.

The IC_{50} ranged from 12.8 (HH) to 21.9 mcM (MJ) for curcumin and from 18.9 (BV-173) to more than 400 mcM (BC-3C, T-24) for gerisan. Curcumin induced apoptosis as demonstrated by activation of caspases, PARP cleavage and oligonucleosomal DNA fragmentation. Interestingly, Hut-78 and MJ cells had the highest expression of Bcl-XL and HH cells had low Bcl-XL level. Higher levels of phosphorylated Akt were found in HH and MyLa CD8+ cells.

Our data indicate that curcumin and gerisan hold promise as future therapeutics for human malignancies. Gerisan was found to circumvent multidrug resistance caused by the expression of the MRP-1 membrane transporter. Further detailed pharmacological investigations are warranted.

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THE NEW ALKYLPHOSPHOCHOLINE ERUFOSINE AMELIORATES BONE MARROW TOXICITY OF CLASSICAL CYTOSTATICS

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Numerous conventional antitumor agents run the risk of damaging healthy, fast-proliferating tissues, such as the hematopoietic bone marrow, the gastrointestinal epithelia and other normal tissues via a direct cellular DNA damage and subsequent cell death. It is still a great challenge to find new and effective compounds that exert no such side effects. Erufosine (Erucylphospho-N,N,N-trimethylpropylammonium, EPC3) is a new and promising antineoplastic agent that exhibits selective activity against tumor cells without affecting the normal bone marrow and is undergoing now phase II clinical trials in leukemia patients.

Aim of the current study was to investigate if the combination of erufosine with clinically used cytoreductive agents may reduce bone marrow toxicity. In addition the antitumor activity of the combinations was compared with the cytotoxic activity of every compound or drug alone.

LTBMCCs (long term bone marrow cell cultures) were run after isolation of mouse bone marrow cells and cultured for 14 days on a fibroblast monolayer. Thereafter, cultures were treated with single drugs or combinations. After 24 h incubation cells were plated in a semisolid medium and stimulated with growth factors to form colonies (according to the number of survived colony forming units). Same combinations were used for the treatment of the leukemic K-562 cells and the survival cell fraction was measured by the colorimetric MTT-assay. Erufosine ameliorated the bone marrow toxicity of all cytostatics used. Erufosine itself stimulated the growth of GM-CFUs up to 28% of untreated control. Combinations of erufosine with epirubicine or cytarabine showed synergistic drug interactions against K-562 malignant cells.

In conclusion, erufosine could be rationally used in combinations with classical cytostatics because it lowers their bone marrow toxicity.

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DAS ENCIKLOPÄDISCHE BILD DER DONAU

Als Konversationslexikon bezeichnet man eine entstandene Gattung von lexikographischen Nachschlagewerken, deren spezifisches Anliegen es ist, Wissen allgemeinverständlich, aber umfassend darzustellen. Das Selbstverständnis des Konversationslexikons beschreibt der Brockhaus 1868 folgendermaßen: „Das Conversations-Lexikon [hat] die Flüssigmachung und Popularisierung der wissenschaftlichen, künstlerischen und technischen Ergebnisse, nicht für die geschäftliche Praxis, sondern für die Befriedigung und Förderung der allgemeinen Bildung zur Aufgabe“

Das erste Konversationslexikon war das *Reale Staats- Zeitungs- und Conversations-Lexicon*, das seit 1708 diesen Titel trägt. Der Lehrer Johann Hübner verfasste nur die Vorrede, aber das Lexikon wurde unter seinem Namen als *Hübners Lexicon* oder *Hübners Conversations-Lexicon* bekannt. Es erlebte im 18. Jahrhundert 27 Auflagen und begründete so den Begriff *Konversationslexikon* als ein populäres allgemeines Nachschlagewerk.

Im 19. Jahrhundert die bekanteste Nachschlagwerke wurden in Verläge von Friedrich Arnold Brockhaus und Bibliographisches Institut in Leipzig vorbereitet und herausgegeben. Hier ist die Rede über Brockhaus *Conversations-Lexikon oder encyklopädisches Handwörterbuch für gebildete Stände* und *Allgemeine deutsche Real-Encyklopädie für die gebildeten Stände (Conversations-Lexikon)* und *Meyer Konversations-Lexikon. Eine Enzyklopädie des allgemeinen Wissens.*

In dieser Arbeit es handel sich um die Texte über die Donau im obengenannten Nachschlagwerken. Es ist untersucht wie man das bekanteste Fluß in Europa beschrieben hat. Was für Autoren überhaupt war die Donau in politischen, wirtschaftlichen und kulturellen Sinne. Welche Spuren hat die Donau, als zweitgrößter europäischer Fluss, in den Kulturen ihrer Anrainerländer hinterlassen. Wie damals im 18. und 19. Jahrhundert war Dampfschifffahrt auf der Donau.

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POTENTIAL OF DANUBIAN REGION: SCOPE FROM ASTROPHYSICS

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It is well known that economic development of the Danube region is inter and cross correlated with creating an innovation-friendly environment, which is based on education and research, and backed by entrepreneurship. Here we will present educational and scientific activities of the Group of Astrophysical Spectroscopy of Astronomical Observatory Belgrade, which were undertaken in the past several years promoting some of the goals of EU Strategy for the Danube Region. Also it will be given some implications for the future development of Danubian Region.

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DANUBE AS A GEOPOLITICAL AND CULTURAL FACTOR OF DIVISIONS AND MERGINGS BETWEEN CENTRAL AND SOUTH-EASTERN EUROPE

Importance of the Danube as a border and communication junction between the Roman Empire and the Germanic world is undeniable. The true importance of the Danube is emerging in Roman time because of many geopolitical and historical occurrences that shaped both Roman and Germanic world.

In the Medieval times the Danube was an intersection between Asiatic people like Huns, Avars and Magyars and Western and Byzantine civilizations. During that time the Danube also stimulated growth of the Hungarian kingdom providing the main land trade route between the East and the West.

During the time of Ottoman conquest the Danube was very important for Ottoman Turks as the primary course of their advance. Ottoman-Hungarian and later Ottoman-Habsburg rivalry shaped the course of historical events that took place in the following period.

The Austro-Hungarian Empire was the second-to-last European land empire. Like the other great European Empires, Austria-Hungary was a combination of nationalities and ethnic groups controlled by a central group while having local rulers on a regional, small scale.

The idea for a federalized state was created by a commission of scholars associated with Archduke Franz Ferdinand who favored liberalization in the empire as part of a modernization program. The commission could not agree on an exact model for the country but solicited others for ideas. The most thought out idea came from an unlikely source. Aurel Popovici, an ethnic Romanian who campaigned for equal rights for Romanians in the Hungarian zone, was an outsider but he was able to communicate his specific idea with the scholars who in turn gave the proposal to Ferdinand for consideration.

Towards its sudden end, these were the plans to reorganize the Austria-Hungary into a federal country comprised by semi-autonomous states. The proposed model was never to be realized in reality but it served in part as a model for the European Union.

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RIFT IN BELGRADE

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The Pannonian basin collapsed along the margins and often also beyond the margins, i.e. perpendicular to the margin itself.

In Belgrade, in the area of the hospitals, a rift is found filled with debris of different kind of Mesozoic rocks. It is covered with Sarmatian pelecipode-limestone, in which a small cave with stalactite, 15 cm long, was formed.

In the shaft for the underground garages (4 stories) in the street Višegradska 20, a detailed inspection of the 14.5 m geological column was carried out. It was filled with all different kind of Mesozoic rocks. Similar chaotic material is found in the wider area, all the way to the slope above the creek Mokroluški Potok. Very new diggings were made for the construction of the sub-basement beneath the First Surgical Hospital. During this, some 15 flat ellipsoidal boulders (around 50 kg each) and two blocks (cca. 300 kg each) where pulled out.

The instability of the slope should be assumed, because boulders are LOOSE. For this reason detailed geological investigation should be carried out and subsequently the chaotic material below hospitals cemented.

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POINT-CONTACT SPECTROSCOPY OF MODERN SUPERCONDUCTORS

Superconductivity is one of the great frontiers in solid state physics, although it was discovered more than 100 years ago. Importance and relevance of scientific research in this field are confirmed by awarding of 5 Nobel Prizes. Superconductors are materials that have no resistance to the flow of electrical current. Thus they have promising applications in energetics and electronics due to zero energy loss, in medicine and modern "MagLev" trains through their capacity of obtaining high magnetic field without heating by high current density, etc. The main problem here is that the commonly used superconductors require very low temperatures, below 20 Kelvins (minus 253°C). Thus, liquid helium is required. In modern superconductors, such as the so-called high-temperature superconductors (or cuprates) their "magic" properties work already below 130 Kelvins, that is, cheaper liquid nitrogen can be used. The great efforts in this direction have been undertaken to find new superconducting materials with even a higher critical temperature of the superconducting transition and to make their application wider, namely applicable at room temperatures. This activity requires the basic research to clarify mechanisms of superconductivity by obtaining necessary information by different physical methods. In this connection, during the last years superconducting nano-sized point contacts have been attracted a significant attention. In the talk I show briefly the capability of the powerful method such as point-contact spectroscopy to recovery of the key spectral information from current-voltage characteristics of point contacts on some actual superconductors. This research is carried out as well in close cooperation with the physicists from the Danube countries - Germany, Slovakia, Moldova and Ukraine.

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INCRETIN-BASED THERAPY IN TYPE 2 DIABETES: RELEVANCE FOR GLUCOSE CONTROL AND BODY WEIGHT

The incretin effect, defined as the amplification of nutrient-induced insulin secretion, is mediated by the gut hormones, among which glucagon-like peptide 1 (GLP-1) plays a major role. GLP-1 was proven to exhibit a strong and glucose-dependent insulinotropic activity in humans Moreover, GLP-1 suppresses glucagon release and exhibits a strong effect on gastrointestinal function by inhibiting gastric emptying. Also, GLP-1 was found to be very rapidly degraded by an enzyme, dipeptidyl-peptidase 4 (DPP-4), which occurs within minutes, and represents an important determinant both regarding its physiological effects and its pharmacological use.

In Type 2 diabetes (T2D), a marked blunting of the incretin effect was demonstrated The first step towards the use incretin-based treatment in T2D were the results showing that intravenous infusion of GLP-1 was able to potentiate insulin secretion and thus normalize blood glucose levels in a glucose-dependent manner. After those initial data, we have seen the development of the two distinct groups of incretin-based pharmacological agents: GLP-1 receptor agonists (GLP-1RA) and DPP-4 inhibitors. The GLP-1RA are shown to induce a potent stimulation of insulin secretion and consecutive decrease of glycemia, together with an important weight decrease and their implementation is accompanied with differing degree of nausea, which usually in manageable in the course of treatment. Our results have demonstrated that GLP-1RA could achieve better metabolic control without inducing hypoglycemia compared to insulin treatment in the long-standing T2D. The DPP-4 inhibitors also induce a significant decrease in glycemia, although to lesser extent than GLP-1RAs, their effect is weight neutral while they do not cause nausea nor other adverse effects. The iincretin-based therapy has been recommended primarily for the use in the second step of the treatment, i.e. after the failure of metformin alone therapy or in the third step when combined with insulin treatment.

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BODY EXPLORER 3.0: AN INTERACTIVE MULTILINGUAL WEB SYSTEM FOR STUDYING CROSS-SECTIONAL ANATOMY

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Sectional techniques (computer tomography, magnetic resonance imaging and sonography) are widely used in the medical field. In order to facilitate successful interpretation of the anatomical structures, in 1997 we published our first interactive program on the cross-sectional anatomy of the Visible Human Male, termed Body Explorer. The program was used in Latin and English according Terminologia Anatomica, the internationally accepted source for human anatomical terminology. In 2001, the completely revised multilingual (Latin and six European languages) Body Explorer 2.0 was launched containing important additional information, including images of the male and female pelvis. The novel web version of the Body Explorer 3.0 features more than 2000 high-resolution photographs of a human body offering a zoom, overlay, search and many extra functions. Thus, it enables multiple users to easily and comprehensively navigate through the virtual body in real-time, to display relevant sections and to achieve interpretive excellence in 13 different languages, including Latin, German, English, French, Italian, Spanish, Portuguese, Bulgarian, Russian, Turkish, Arabic, Japanese and Chinese. Further language versions, such as Czech, Hungarian and Romanian, are under way. Our multilingual approach will facilitate a successful communication not only within the anatomical community but also in many other medical disciplines worldwide. Last but not least, the program will help to improve the health professional education by providing new services for teachers and students in discovering the fascinating world of human anatomy and limitless opportunities for physicians in their pursuit of advanced training in cross-sectional studies.

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BEER FUNCTIONAL PROPERTIES

Beer is one of the oldest and most popular beverages with a high world production rate of approximately 1.6 x 10^{11} L per year. Through the history, it has been accepted not only as refreshing drink, but also as a liquid bread, a source of energy, a healing remedy and, lastly, as a safe drink that can promote well being. For the last decade, it has been in focus of significant medical research and the numerous results gave the scientific confirmation of the statement known for centuries: beer is far more than a thirst-quenching low-alcohol beverage. Published data have indicated that beer contains a wide range of nutrients with bioactive properties, and if consumed moderately and in a responsible manner, it can be a useful part of a healthy diet.

Of particular interest are beer polyphenol, mineral, trace element and vitamin composition, as well as its antioxidant properties. The data published worldwide as the results of numerous long-term studies indicate that beer has a potentially positive influence on low blood pressure, atherosclerosis, and cardiovascular diseases, and may help protect against gallstones and kidney stone formation, dementia, osteoporosis etc. However, several facts deserve to be discussed: the latest information considering the beer's beneficial action, the meaning of moderation in each particular case, the significance of beer versus wine in health promotion, the thirst-quenching effect as a low-alcohol beverage, the influence on the energy intake and the problem with obesity, and, finally, the perspective in terms of speciality beers with new sensory and functional properties.

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EARLY CHILDHOOD INTERVENTION: CAN WE COOPERATE BETTER?

Early childhood intervention is a support system for children with developmental disabilities or delays and their families. It is a socially and culturally based activity that in each country reflects a range of particularities of its historical development. This is also the reason why we can expect similarities in the countries in the Danubian region. But the first step toward the exploration of similarities and the improvement of cooperation is to know more about early childhood intervention in each country. In this presentation the current status of the interdisciplinary field of early childhood intervention in Croatia will be presented.

In Croatia high priority is always given to parenthood, education and the healthy development of children, which probably explains a high interest in Early Childhood Intervention (ECI) that has been present from its very beginning in the early 1970s. Since that time it has been clear that early childhood is a vital time for children with disabilities to ensure access to intervention which can help them reach their full potential. However early support has been closely linked to medical settings and not family oriented enough.

Most changes have been initiated in the past ten years by parents associations and university circles. Changes are connected with practice (implementation of family centered approach), with the training of experts through post-graduate university courses in early childhood intervention and with improved legislation in the social system. The goal of numerous initiatives has been to create conditions that will enable the parent to let go of his role of a co-therapist and become a parent again. The next step is seen in the creation of a generally available network of services open to all parents and their young children regardless of their type of developmental problem.

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THE VINČA CULTURE – CLIMATE AND ENVIRONMENT IN THE DANUBE REGION IN THE 6TH AND 5TH MILLENNIUM BC

In the paper I present the current state of knowledge about the environment and climate of the Danube region in the area of Vinča culture during the late 6th and early 6th Millennium BC. Vinča culture, the main characteristic of late Neolithic/early Copper age period in the central Balkans and parts of Vojvodina grew around major waterways like Danube, Sava and Morava rivers. Danube, as an important resource and a communication route was of essential importance to the members of the late Neolithic/early Copper age Vinča culture. It is then no surprise that some of the most famous sites like the eponymous sites of Belo Brdo in Vinča, or Opovo were located on its banks or just past the marshy surrounding close to them. In this presentation a study of past environment and climate at the time of Vinča culture is given, based on modern archaeological excavations, paleobotanical and zooarchaeological evidence. Plant and animal remains are, alongside human crafted artefacts amongst the most numerous finds of any archaeological site. Based on the characteristics of charred seed or fragments of wood we can easily identify a lot of species either grown or collected from the surrounding. Dry sieving and flotation have, over the recent years provided us with plentiful evidence to study and the advancement in the study of these remains has provided us an insight into the environment and climate of Vinča culture society. Today, modern archaeological excavations cannot be envisaged without cooperation with scientific specialists trained in various aspects of science like palynology, botany, zoology, mollusc studies etc. Combining these results we can, with a certain degree of confidence, speak of the environment the Neolithic and the life and activities of communities located therein.

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MORPHOLOGY OF BALKAN ENDEMIC NEPHROPATHY: CURRENT STATE FOR THE LAST 10 YEARS

Background. Balkan endemic nephropathy (BEN) is a very interesting renal disease, because of its unique clinical, epidemiological and morphological characteristics. Histologically there are intensive and widespread interstitial fibrosis and extensive tubular atrophy without any inflammation and with good preserved glomeruli. It seems that the incidence of BEN decreased based on clinical and epidemiological studies.

Methods. In the present paper we evaluate the incidence of BEN from the morphological point of view for the last decade. Therefore we analysed pathological material obtained from autopsies, kidney biopsies and nephrectomy due to upper urothelial cancer (UUC) from the patients which were divided into two groups: those with permanent residence in BEN areas and those from non-endemic areas.

Results. At the Institute of Pathology, Faculty of Medicine, University of Belgrade for the last 15 years we had only one autopsy due to BEN out of 6825. More than thirty years ago there were over 50 autopsy cases of BEN at the same Institute. For the last decade we had only two kidney biopsies suspected for BEN out of 2182, but morphologically not confirmed as BEN. However, previously we had over 40 kidney biopsies diagnosed as early or late stage of BEN. At the Clinical centre of Serbia 180 nephrectomies were performed due to UUC. The incidence of UUC for the last five years in BEN regions has significantly decreased, whereas at the same time in non BEN regions it has remained on the same level. There was no morphological difference of the renal tissue adjacent to tumour between patients from BEN and non-BEN regions.

Conclusion. According to our study based on routine pathological work, we could clearly conclude that BEN today is more clinical and epidemiological than morphological entity. This study also supports ideas of other authors that BEN had epidemic character and that it slowly disappears over time.

Acknowledgment:
This work was partly supported by grant No. 175047 from the Ministry of Science and Technological Development of the Republic of Serbia and by Alexander von Humboldt foundation.

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APPLICATION POSSIBILITIES IN THE TRANSDANUBIAN REGION OF THE LOW AND MEDIUM POWER PROCESSORS FOR GRID AND USER FRIENDLY ENERGY CONVERSION

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The quality of the power energy in the medium and low voltage grids is a problem not only for the grid manager but for the final user too. Considering that the neighbor national grids are interconnected, the electric energy quality becomes a common problem for the entire danubian region. In the medium power and at the point of common coupling with the public networks the grid operator has the task to assure a good quality of the electric energy by means of appropriate power processors. These processors must be placed by universal transnational criteria. This paper is presenting a general overview on this matter.

Unfortunately the use of the special power processors only at the point of common coupling is not a guarantee for good quality of the energy inside the public networks. This becomes very important at the final consumer. A poor quality of the electric parameters of the electrical energy could directly affect in the negative the medium power and domestic consumers. At this level, the solution could be based also on medium to low power conditioning converters. A new and very interesting solution could be the reconfiguration of the actual, non-linear electronic loads, obtaining a linear behavior by means of appropriate electronic circuits and of proper automatic control strategies. For this, the present paper is introducing some solutions based on unity power factor rectifiers, active PFC for SMPS, but also a few special ideas towards the LED and fluorescent electronic lighting systems. All will be done by mathematical analyses, simulations and practical measurements. The paper will also promote some novel ideas on how using these converters, could improve the power factor and reduce the distortions inside the nearby network. The proper marketing of line friendly lighting systems, electric heating and electronic solutions for home appliances, based on unitary criterions in the danubian region, could lead to a stable, high performance power grid, with low circulating reactive power and with a minimum of distortions.

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DENSIFICATION OF ADDITIVE FREE NANO β-SiC BY ULTRA-HIGH PRESSURE

Additive-free β-SiC nanopowders with average grain size of 20-30 nm were densified by high-pressure "anvil-type with hollows" apparatus at pressure og 4 GPa. Temperature, holding times were varied to investigated their effect on the densification and grain growth during sintering. High densifications were obtained for temperatures greater than 1500 °C. Full densification (> 99%) was reached at a sintering temperature of 1900 °C for only 60s. Crystalline phases as well as crystalline size were identified by X-ray diffraction (XRD). The microstructural observation of polished specimens was performed by scanning electron microscopy (SEM). Mechanical properties of the samples (micro and nano hardness, toughness) were determined and a correlation between the final microstructures and the mechanical behavior was established.

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NEUROIMMUNOLOGY BY THE DANUBE

Numerous scientific institutions are present in the Danube region. Many of these are dedicated to neuroimmunological research and some of the prominent neuroimmunologists have been working there. The most important achievements of Danubian scientist in neuroimmunology will be presented. Possibilities of cooperation among neuroimmunologists in the Danube region will be discussed.

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DIE DONAU ALS GRENZE UND VERBINDUNGSLINIE ZWISCHEN VÖLKERN UND NATIONEN

Von der Einmündung der Save bis zum Schwarzen Meer bildete die Donau in der Antike, so wie heute noch, nicht nur eine ausgeprägte geographische, sondern auch eine ethnische sowie politische Grenze, die jedoch nicht unüberbrückbar war.

Die Donau und die römische Grenze (Limes) verbanden die Provinzen an ihrem rechten Ufer von Deutschland über Österreich, Ungarn, Serbien und Bulgarien bis zum Schwarzen Meer. Seit Trajans Eroberung Dakiens wurde das Gebiet nördlich der Donau dem römischen Staat einverleibt und das linke Donauufer wurde durch eine Brücke mit dem rechten verbunden. Die römische Grenze verlief durch mehrere Staaten in Europa, Asien und Afrika und die Limesforschung bildet heute eine gemeinsame Aufgabe vieler Nationen und Staaten. Seit 1956 sind die römische Grenze und die römische Militärgeschichte Gegenstand zahlreicher internationaler Limeskongresse gewesen. Regionale wissenschaftliche Treffen und Symposien in Serbien (Kladovo, 1995, Kladovo–Turnu-Severin, 1998 und Beograd 2003), Bulgarien (Novae, Jatrus, 1998), Polen (Posen/Poznan 1997) und Rumänien (Halmiris 1996), haben wesentliche Beiträge zur Erforschung des Limes und der römischen Herrschaft geliefert. Eine wichtige Rolle bei der Wiederherstellung von abgebrochenen Verbindungen in der Forschung über die römische Geschichte an der Donau hat nach dem Krieg in Jugoslawien die AvH-Stiftung gespielt. Durch die Initiative der Stiftung wurde 2003 in Beograd ein regionales Treffen von Archäologen, Althistorikern und Juristen, die das römische Recht erforschen, organisiert. Über 40 Althistoriker und Archäologen aus Serbien, Mazedonien, Slowenien, Österreich, Deutschland, Ungarn, Polen, die in Bulgarien archäologische Forschungen betrieben, aber auch Kollegen aus Bulgarien und Rumänien, erörterten Probleme von Urbanisierung, Straßen(verbindungen), Ökonomie und Religion in den römischen Provinzen an der Donau.

In diesem Beitrag wird eine kurze Übersicht, I. über die Donau im Djerdap und über die römischen Festungen an der Donau und II. über die bisherigen regionalen Treffen, die der Limesforschung gewidmet waren, vorgelegt.

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OXYGEN - MEDICATION WITH SIDE EFFECTS

Oxygen (O_2) is one of the most prescribed therapeutic agents worldwide. However, it is often overlooked that O_2 is a true drug, with specific biological and physiological actions, dose-dependent beneficial and adverse effects.

Although the practice to apply O_2 to all patients having an acute myocardial infarction (AMI) is a century old, this paradigm is changing. Today is recognized that the guidelines regarding the routine use of O_2 to all patients having AMI, (class IIa, LOE C), are based on non-critical judgment and should be revised. Non-hypoxemic patients are at high risk to be acutely exposed to hyperoxia. Hyperoxia can raise blood pressure, lower cardiac index, heart rate and cardiac oxygen consumption. Indeed, although hyperoxia slightly increases arterial blood oxygen content, it actually decreases tissue oxygen delivery, due to constriction of the coronary, cerebral, renal and other key vasculatures.

The mechanisms of hyperoxia-induced vasoconstriction are not completely understood. Increased oxidative stress after hyperoxia, and subsequent inhibition of vasodilators, like nitric oxide, is one plausible mechanism. However, hyperoxia-induced modulation of function of potassium / calcium channels and raised levels of angiotensin II and endothelin-1, could also contribute to this adverse effect.

In order to fully understand the efficiency and safety of O_2, new randomized, double-blinded, controlled clinical trials are warranted in the future.

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HLA AND DISEASE SUSCEPTIBILITY

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HLA-antigens are encoded by genes of the Major Histocompatibility Complex (MHC) on chromosome 6 in humans. They bind peptides from self and foreign proteins and function as immune-regulatory molecules in adaptive and innate immune responses by interaction with receptors on T-cells, NK-cells and myeloid cells. HLA-antigens show a high polymorphism with wide variations of specific HLA-allele frequencies in different world populations. Since their first description it has been recognized that susceptibility to various diseases, in particular autoimmune diseases, as well as resistance to infection is linked to inheritance of specific HLA-alleles. Although still incompletely understood, new technical developments in the genetic differentiation of HLA-alleles and the neighboring linked genes as well as progress in the molecular characterization of immune cell interactions have provided insight into pathogenetic mechanisms which may be involved in the development of the associated diseases. Identification of expression quantitative trait loci (eQTL) for genes in the HLA system provided evidence that besides specific genetic variations of HLA-molecule structures, the level of gene expression influences disease susceptibility. We will focus on specific informative examples of HLA-associated rheumatic diseases.

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METABOLIC SYNDROME, AN INCREASING PROBLEM WORLDWIDE

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Metabolic syndrome describes risk factors that raises the risk for brain, heart, kidney, diseases and other health problems, such as diabetes, stroke, myocardial infarction and renal insufficiency. The term "metabolic" reflects biochemical and other processes in the functioning of the body. Such risk factors include life style habits and conditions that increase the risk of developing a disease. The number of patients suffering from diabetes mellitus type II, arterial hypertension and obesity is increasing worldwide. Thus these diseases are responsible for life shortening, although they can be easily recognized, diagnosed and successfully treated. The treatment of the end organ failure is very expensive and therefore of great socio economic interest in all societies. Intensive public health education is necessary to influence and to stop this life threatening processes. As the number of patients suffering from end stage renal disease is steadily increasing worldwide due to metabolic syndrome we analyzed mechanisms involved in the processes of renal fibrosis, the histological feature of terminal renal insufficiency and, furthermore, studied the relevance of epigenetic factors. Thus, we will report new diagnostic tools e.g. "biomarkers" as well as new therapeutic strategies.

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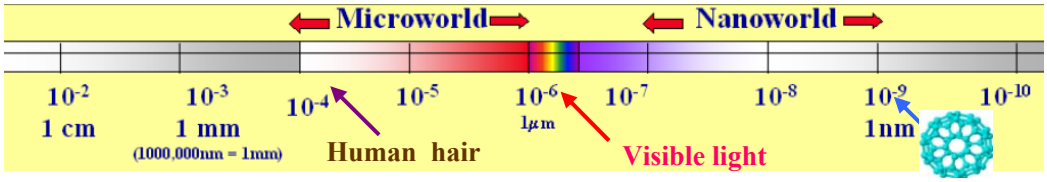
NANOPHYSICS – WEALTH "AT THE BOTTOM"

Nanophysics is a part of nanoscience, which involves creation and study of physical properties of very small scale objects, what has the potential to reshape the world around us. The idea of changing the big world by working at the nanoscale was proposed first by famous scientist Richard Feynman 50 years ago in his essay "Room at the bottom". But only in the last few decades science and technology give scientists sufficient skill to enable them to start working directly in this fascinating world. Nanophysics is a rich field of research. Among many NANOs, like Nano-technology, Nano-electronics, Nano-mate-rials, Nano-medicine etc, Nanophysics plays a key role. A huge range of applications, based on stronger, lighter or smart materials, or compounds with unusual mechanical, electrical, optical etc. properties, are possible, since even the properties of common materials may be changed dramatically at the nanoscale.



In the second part of my talk, extraordinary physical properties of point contacts, nano-sized constrictions between two metals, will be presented. They have been used during the last 40 years as a spectroscopic tool, known as Point-Contact Spectroscopy [1]. However, due to small size of point contacts, of the order of 10 nanometers, they display very spectacular properties promising to be used in electronics and spintronics, in sensor tech-nique as well as for searching new phenomena at the nanoscale.

[1] Yu. G. Naidyuk and I. K. Yanson, *Point-Contact Spectroscopy* (Springer, NY, 2005).

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MANAGEMENT OF NATURAL PROTECTED AREAS IN SERBIA - NATIONAL PARK DJERDAP

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In Serbia, under different type of protection is 522,120 ha, which is 5.91% of the State territory. There are 463 protected areas and 4 of them are national parks (NP), which have a status of "protected area of extraordinary importance".

The largest NP in Serbia, NP Djerdap, with the total area of 63,608 ha, is located in north-eastern Serbia, on the border with Romania and stretches along the right bank of the Danube River, for about 100 km. In this region, the Danube River passes through the longest European composite valley, which is comprised of 3 smaller gorges, 2 canyons and 3 valleys.

NP Djerdap's most characteristic features are exceptional wealth and diversity of flora, fauna, hydrological values, geomorphologic objects and cultural monuments from various historical periods (Lepenski Vir, the Tabula Triana, the Golubac Fortress and the Diana Fortress). State forests cover 84.5% and private 15.5% of total forest area of the NP (45,240 ha).

Protective functions of forest resources are dominant in the area of the NP. Although there are three different zones of protection, only 5.9% of the total forest area is in the first zone of protection, while the rest is under the second and the third zones, where use of forest resources (including timber) is allowed.

NP Djerdap is managed by Public Enterprise "NP Djerdap", with headquarter in Donji Milanovac. Priority management goals, measures and activities relate to sustainable use, protection, maintenance, monitoring and improvement of natural resources. Other activities include landscape planning and management, education, research and scientific activities, protection and promotion of cultural and historical heritage and tourism development.

The aim of this paper is to present state of natural protected areas management in Serbia, with a special emphasis on NP Djerdap.

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THE RELAXATION OF PREGNANT HUMAN MYOMETRIUM BY NATURAL POLYPHENOL RESVERATROL

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Resveratrol is a phytoalexin produced by grapevines. The benefit of resveratrol to health is widely reported. Resveratrol has been found to promote vascular relaxation but its mechanism of action is unclear. The data about influence of resveratrol on the contractility of smooth muscles of uterus are not available. The aims of our study were to investigate the effects of resveratrol on the contractility of human pregnant uterus and to investigate the involvement of K^+ channels in effect of resveratrol on the contractions provoked by oxytocin.

Myometrial samples were obtained from nonlaboring women (37–39 wk gestation) undergoing elective cesarean sections. Samples were mounted into organ bath for recording isometric tension. Resveratrol (1–100 μM) was added to the bath cumulatively. In order to test the involvement of K^+ channels in the mechanism of action of resveratrol, a selective blocker of K_{ATP} channels, glibenclamide (GLB), and non-selective blockers of Kir, Kv and BK_{Ca}channels ($BaCl_2$, 4-aminopiridine, 4-AP and tetraethylamonium, TEA, respectively) were tested. Experiments followed a multiple curve design.

Resveratrol induced a concentration-dependent relaxation of contractions provoked by oxytocin. GLB (10 μM), TEA (1 mM) and $BaCl_2$ (1 mM) antagonized the response to resveratrol on oxytocin-induced contractions. However, 4-AP (1 mM) did not modify resveratrol-induced inhibition of oxytocin elicited contractions. Inhibition achieved by concentration of 0. 1 mM RSV was insensitive to all K^+ channel blockers. Resveratrol is uterine relaxant and can be use in tocolysis. The antagonism of resveratrol's effect by different K^+ channels blockers suggests that $K_{ATP,}$ Kir and BK_{Ca} channels are involved in resveratrol action on the contractions of human pregnant uterus. It seems that resveratrol, when applied in high concentration, may exert an additional mechanism of action.

Funding: Our work has been supported by Scientific Research Grants No 31020 from the Ministry of Science (Serbia).

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THE DANUBE EXPEDITIONS

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The ongoing efforts focusing on the Danube investigations are legitimate as the Danube is the second largest European river and the largest waterway in the EU. The Danube is also a corridor that links institutions and people in their efforts to understand functioning of this large ecosystem. Prior to the promotion of philosophy established by the EU Water Framework Directive (WFD) in 2000, several comprehensive expeditions took place along the Danube – e.g. the surveys organized by the International Association for the Danube River in 1960 and 1988 or the Equipe Cousteau programme in 1990-1992. Moreover, the Danube has been investigated in the frame of numerous national monitoring programs. Despite this intensive research, it became clear that without joint efforts of all interested parties, it is impossible to collect comprehensive, comparable data for the entire Danube, providing a basis for a better understanding of complex processes that occur in this large river. Guided by this idea, as well as by the motivation to establish an efficient expert cooperation throughout the Danube River Basin, the International Commission for the Protection of the Danube River (ICPDR) introduced the concept of joint surveys of the Danube River. Those efforts resulted in several complex, multidisciplinary surveys – the Joint Danube Survey (JDS) 1 and International Tisza Survey in 2001, AquaTerra Danube Survey in 2004 and JDS2 in 2007. The aim of this presentation is to briefly illustrate the objectives and outcomes of those Danube Surveys that yielded high quality data covering all quality elements needed for the ecological and chemical status assessment of the water bodies and even went beyond by exploring various processes in the river system (microbiology, isotope analysis). Motivated by experience from previous surveys, ICPDR is in the final phase of preparation of JDS3 expedition that will take place in late summer 2013.

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APPROACHES FOR REDUCING POWER CONSUMPTION FOR WIRELESS COMMUNICATIONS

Telecommunications present a significant part of the economy; in the United States of America it is about 4%, and corresponds to roughly 4% of the energy useage as well. In 2011, the country consumed 97 quadrillion BTUs (*Annual Energy Review, US Energy Information, Sept.2012*). In 2007, the total power, in gigawatts (GW) used in telecommunications consisted of: AM and FM radio transmitters (0.03 and 0.3GW); TV transmitters (3GW); cellular basestations (2GW); cable TV (1GW); internet (~20GW); and data centers, such as Google (10GW). The number of cellular users and base-stations is increasing rapidly worldwide, as is the number of internet users, therefore increasing the energy demands.

This talk will first present the newest available data for world-wide consumption related to communications, and focus on commercial wireless communications power consumption. Consider an example cell-phone base station, which typically radiates about 50-100W around 2GHz in each sector. Due to bandwidth limitations, increasingly complex modulation schemes are used, which demand high linearity of the transmitter. This is especially difficult to accomplish if the transmitter needs to be efficient, and typical cell-phone output-stage power amplifier efficiencies are about 10%. An example of a 40W microwave transmitter module which is 9% efficient is illustrative: this requires 600W of prime module power due to the 80% efficient cable from the tower to the utility room, and the heat losses in the transmitter. In addition, 600W of active cooling are required per module, and for a 12-module base-station, this implies about 14kW of power consumption. If the power amplifier can be made 45% efficient, while keeping its linearity, the cooling energy requirement will also go down, reducing the total consumption to 2.4kW, or a factor of seven. In this talk, engineering challenges and solutions for achieving efficiency increases will be described and examples shown.

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WATER RESOURCES IN DANUBE RIVER BASIN

This paper briefly decribes the result of mutual work of the IHP UNESCO National Committees of Danube countries and experts and scientists nominated by their countries. The main objectives of the work were estimation of water balance components on the basis of mathematiocal modelling and preparation of maps of water balance components for the Danube Basin. Maps of the mean annual precipitation, actual evapopration and runoff were prepared. Difficulties in data collection in individual countries resulted in the obligatory period for data analysis of 1961-1990.

The paper deals with assessment of the general water balance of the Danube River Basin. In terms of working maps, the USGS (US Geological Survey) HYDRO1k digital terrian model was chosen. The Danube area was split into 109 balance regions. The intention was to apply the water balance model WatBal to each such region to calculate evapotranspiration for the balance regions as the main output.

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THE EFFECT OF RESVERATROL ON THE HUMAN UMBILICAL VEIN

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Introduction: Resveratrol induces vasorelaxation through both endothelium-dependent and -independent mechanisms. The effect of resveratrol on human umbilical vein (HUV) is not known. Therefore, the aim of our study was to define the role of K^+ channel in the vasodilatation of HUV induced by resveratrol.

Materials and Methods: Serotonin (5-HT) or 100 mM K^+ were used for precontraction of the HUV without endothelium. The cumulative concentration-response curves were obtained by adding increasing concentrations (1-100 μM) of resveratrol. K^+-channel inhibitors were added in the bath before resveratrol in order to tested the role of vascular K^+ channels in its effect.

Results: Resveratrol induced concentration-dependent vasodilatation (EC_{50} = 16.5 μM). A selective blocker of K_{ATP} channels, glibenclamide (10 μM) and 4-aminopiridine (4-AP, 1 mM), a blocker K_V channels, induced significant shift to the right ($P < 0.05$) of the concentration-response curves for resveratrol. Tetraethylamonium (TEA, 10 μM), which predominantly inhibits K_{Ca} channels and barium-chloride ($BaCl_2$, 1 mM), a blocker of K_{ir} channels, antagonized the response to resveratrol. The high concentration of resveratrol

(> 30 μM) relaxed HUV bathed by a medium containing 100 mM K^+, with maximum response of 94 % and EC_{50} of 47 μM, $P < 0.05$).

Conclusions: Results suggest that resveratrol induced endothelium-independent vasorelaxation of HUV. The glibenclamide-, 4-AP, TEA- and $BaCl_2$-sensitive K^+ channels are involved in resveratrol vasodilatatory effect. It seems that resveratrol has additional K^+-channel independent mechanism of action.

Funding: Our work has been supported by Scientific Research Grant (TR31020) from the Ministry of Science (Serbia).

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BEHAVIOURAL CHARACTERISATION OF TRANS-RESVERATROL EFFECTS IN RATS

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It has been shown that the trans-isomer of resveratrol demonstrates a variety of pharmacological activities including antioxidant, anti-inflammatory, neuroprotective properties and amelioration of learning and memory impairment. However, its behavioural profile still remains controversial. The goal of the present study was to examine the influence of trans-resveratrol and compare its dose-response effects on memory and depression-like behaviour. We independently studied the effects of trans-resveratrol (5–20 mg/kg) on retention versus acquisition of active avoidance (AA) and depression-like behaviour in the forced swim test (FST). AA test was performed in automated two-way shuttle boxes and programming recording units (Campden Instruments, Sileby, UK). FST was performed in a glass cylinder, 45 cm high, 20 cm diameter filled with water up to a height of 30 cm, with a temperature of 21-23 °C. Male Wistar rats were exposed to two swimming sessions (an initial 15-min pretest session, followed 24 h later by a 5-min test session). We also tested the locomotion to exclude the excitatory or inhibitory effects. Treatment with trans-resveratrol significantly affected retrieval of avoidance responses on the second day of shuttle box testing ($p<0.05$). Dunnett's test indicated that the trans-resveratrol avoidance-facilitatory dose was 20 mg/kg. However, it did not induce significant differences in acquisition rate during 5 days training. In FST, during the test session, ANOVA indicated statistically significant effects of resveratrol ($p<0.001$). Dunnett's analysis showed that resveratrol significantly decreased immobility time at the doses of 10 and 20 mg/kg, exerted acute antidepressant-like effects. ANOVA did not show a significant effect of treatment on the total immobility time of the animals during 30 min of monitoring of spontaneous locomotor activity ($p>0.05$). Our results experimentally support the findings that under certain circumstances, trans-resveratrol, produces acute memory-enhancing and antidepressant-like effects. Furthermore, these effects were not confounded by locomotor influences.

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ORGANIC POLLUTANTS IN RIVERS

Riverine systems in industralised and highly urbanized areas are affected by a huge load of organic pollution. Organic contaminants discharged to the aquatic environment exhibit a high diversity with respect to their molecular structures and the resulting physico-chemical properties. Although the chemical analysis of anthropogenic contamination in river systems is still an important feature, especially with respect to the identification and structure elucidation of novel contaminants, the focus of environmental studies has changed. In recent times the research on the environmental behaviour of organic pollutants became more and more important in order to assess their risk as a result of their emission to natural systems. Consequently, the knowledge not only about the occurrence and amount of anthropogenic contaminants but also about bioavailability, their exchange within different compartments, as well as on molecular aspects of degradation or metabolism processes increases significantly

Further on, environmental studies on the anthropogenic pollution of aquatic systems do not remain on the analysis of pre-selected substances. Considering the currently use of over 1000.000 man-made chemicals in the EU it has to be assumed, that analytical investigations on environmental systems solely focussed on a few pollutants still do not depict the 'real' pollution level. Therefore, the number of more extensive and detailed investigations considering a wide spectrum of relevant organic pollutants increases slowly. Such investigations reveal a more comprehensive view on the state of pollution of a natural system. For all the described purposes, a complementary application of different analytical strategies and methods have to be applied to reveal a better understanding of environmental processes affecting the riverine pollution by organic substances.

Examples of such approaches are presented in this short overview on recent research activities in the field of riverine organic pollution. It demonstrates the need to broaden the spectra of analytical approaches and strategies in order to meet the challenge to obtain the most detailed and most precious view on the anthropogenic impact on the aquatic environment.

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ADVANCED TECHNOLOGY FOR ACTIVE HAIL SUPRESSION IN THE REPUBLIC OF MOLDOVA

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Hail suppression activity based on the rocket technology of transportation and dissemination of a nucleating reagent into nail-producing clouds carried out in the Republic of Moldova are presented. At the moment the agricultural area being under the hail protection is about 1.5 million hectares, i.e., 50% of the territory of the Republic of Moldova.

The basic elements of the hail protection technology in the Republic of Moldova up to now are a specialized antihail rocket system "Alazan-6" for cloud seeding with hail-watch radar signal returns from cloudy cells and a specialized automatic control system ACS-MRL. The system provides collection and processing of the radar-tracking data about clouds with hail-watch radar return signal and gives information about the type of falling precipitation. The system allows control of the cloudy atmosphere for checking the probability of hail formation over the whole territory of the Republic of Moldova as well as over a border-part territory of Romania and Ukraine (up to 100 km from the border) in a *non-stop* mode. The applied technology of hail protection provides the operating efficiency within $84\ \% \leq E \leq 92\ \%$.

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CERAMIC CORE/SHELL PARTICLES IN MODERN SOCIETY

Intensive progress in the area of nanotechnology in recent years has been observed especially in the area of materials science and engineering. One of the most important direction is the preparation of different type of nanoparticles include development of new compositions and the fabrication of multifunctional systems with specific architectures. It was found that thin surface layers on fine particles substantially change their functionalities and properties, such as chemical reactivity, thermal stability, catalytic activity, dispersibility, or optical, magnetic and electronic properties. These heterostructures were first realized in the late 1980s, with semiconductor nanoparticles, where they contributed to carrier confinement or separation, depending on the band gap alignment of the two semiconductor materials with different energy gaps. Since that the terminology “core/shell” was well accepted by researchers and their use was extended to different areas of science and technology, including medicine, catalysis, biotechnology, chemistry, optics, electronics, energy storage, etc. This contribution provides a brief overview of recent progress in the synthesis of core/shell nanostructures and their significant impact on modern society.

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DENTAL IMPLANTS ON A GLOBAL MARKET

Dental implants are known to be the best replacement for the lost natural teeth. Some of the countries of the Danubian region have played an important role in the development of dental implants and associated items either by manufacturing them or performing an invaluable research.

This presentation is intended to describe the present concept of dental implant management serving as a medical device or a trade item as a result of globalization.

Due to rapid industrial and trade development, traveling costs have decreased dramatically thus enabling professionals to travel frequently even long distances and to exchange goods within a short period of time.

The top dental implant manufacturers have provided, so called, implant passports to assist frequent travelers who have dental implants to find instant assistance in a foreign country should they run into difficulties. For those that have low cost implants, there have been many softwares developed for the identification of the type of an implant and its manufacturer.

Potential patients, at present, have a variety of options as far as dental implants are concerned. Providing the same quality is concerned, they can choose sequences of treatments in different geographical regions according to their peofessional commitments and costs.

Implantologists and dental technicians do not need to be in the neighborhood. Due to the invention of dental scanners that are used for CAD performance producing STL files which can be sent via internet to the milling centers in another continent if required, where using CAM technology, crucial parts for construction of crowns and bridges are produced.

Dental implants fits into the current concept of globalization both for the benefit of patients and dental proofessionals.

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MEDICAL PRACTICE IN TRANSITION: THE CASE OF SERBIAN MATERNITY CARE SERVICES AND THEIR USERS

Medicine is not a coherent whole, but a mixture of different conventions, procedures, techniques, opinions, skills and instruments with various regional variations. In medical books and policy documents, different objects of medical practice and clinical experience are usually arranged to form a coherent whole, but in practice there are gaps, inconsistencies and conflicts. Real life medical practice entails multiplicity of interpretations of numbers and images, styles of interaction with patients, decision-making criteria, protocols of interventions and medical technologies in diverse institutional contexts. This heterogeneity and multiplicity is even more emphasized in today's Serbia where the health care system is going through transition. The process of transition is evident on all levels – from health policy level that includes legislations and organization of medical care system, to the level of everyday practice. Besides, that is a process that encompasses different actors involved, both medical staff and patients/users, and affects knowledge, attitudes and habits of both groups. It is important to note that transition is not merely a shift from one clearly defined state into another one, and certainly not solely a top-down organizational transformation. There are gaps between the creation of new policies and their actual implementation. There are also tensions between sources of knowledge/models of practice which result in encounters and conflicts between local and global medical knowledge/practice, and expert and lay one. Drawing on the evidence from everyday medical practice and experiences of women, users of Serbian maternity care services, this presentation will tend to point to some of the important gaps, conflicts and inconsistencies that are being reproduced in our health system. The main goal will be to draw attention to those specific weak points that would especially benefit from certain resources that could be obtained from cooperation with other countries from the region which faced similar challenges in the past.

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MAJOR DEVELOPMENTS IN THE EUROPEAN AND GERMAN HIGHER EDUCATION SECTOR DURING THE LAST 15 YEARS WITH A FOCUS ON INTERNATIONALIZATION AND STUDENT/RESEARCHER MOBILITY

This presentation will provide an overview of major trends, especially the internationalization process of the higher education area in Europe, with a special focus on student and researcher mobility. In line with the development and idée directrice of knowledge-based societies and science-based economies in the OECD and beyond, academic institutions have moved into a globalized and functionally diversified era. Educational researchers sometimes call this the “third revolution”, following Wilhelm von Humboldt’s paradigm of “elitist individuality", and a democratization and expansion phase since the 1960s. Since 1999, this modernization process has been accelerated and galvanized into new structures within European universities, commonly referred to as the Bologna process, supplemented by EU’s Lisbon Strategy (2000). In this context, mobility and internationalization play an increasingly important role in Europe's universities, including a sometimes neglected transnational aspect – a vision the EU now follows with its strategy for the Danube region, too. The presentation looks at the current state of play and describes (perceived) misguided developments, success stories and challenges ahead.

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METHANOL EXTRACT OF ORIGANUM VULGARE AMELIORATES AUTOIMMUNE DIABETES IN MICE

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Type 1 diabetes (T1D), an autoimmune inflammatory disorder, develops as a consequence of pancreatic beta cell destruction mediated by various pro-inflammatory mediators. Since current T1D therapy mainly involves insulin replacement, constant efforts are being directed toward establishing novel therapeutic approaches. Plants or plant extracts are inexhaustible source of medicinal compounds. In this study we have used methanol extract of *Origanum vulgare* (oregano - OE) that has already shown immunomodulatory and cytoprotective properties *in vitro*. OE was prepared from oregano leaves by sequential extraction of four solvents of gradually increasing polarity (hexane, ethyl acetate, dichloromethane and methanol). To evaluate the effect of OE on diabetes development, the extract was administered intraperitoneally to C57BL/6 mice that were subjected to T1D induction by multiple low doses of steptozotocin (MLDS). Results indicate that 10-day OE treatment significantly reduced the incidence and the level of hyperglycemia in MLDS-treated mice and preserved physiological insulin concentration (measured by ELISA). Flow cytometric analysis revealed a reduction in $CD4^+$ cell number within spleen and pancreatic lymph nodes of OE-treated mice. This was accompanied by a significant inhibition of *ex vivo* Th17-related IL-17 secretion, while proto-typical Th1 and Th2 cytokines (IFN-γ and IL-4, respectively) remained unchanged. Further, the presence of $FoxP3^+$ T regulatory cells in lymphoid tissues of OE-treated mice was similar to diabetic mice as well as the percentage of pro-inflammatory $F4/80^+CD40^+$ M1 and anti-inflammatory $F4/80^+CD206^+$ M2 macrophages. In conclusion, our results indicate that OE protected mice from diabetes development through direct blockade of IL-17-mediated lymphocyte response.

Supported by Ministry of Education, Science and Technological Development (ON173013).

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CRITICAL METALS AND THEIR IMPORTANCE IN MODERN LIFE

Critical metals (aluminum, copper, tungsten, indium, platinum, rhodium, rare earth elements,…) represent chemical elements which are essential to an industrial process - for which there is no actual viable replacement. Because of the high application the critical metals having a big importance for the future of the economy in the European countries, especially in electronics, high tech devices and machines as hard discs voice coil magnets. Some critical elements have small reserves and their primary production is extremely small. Their ore deposits are located in a handful of countries (platinum group elements, tungsten, heavy rare-earth elements). In last years the demands of these metals are increased, but the production does not follow its increased consumption. The rare earth elements REE (La, Ce, Y, Pr, Nd,..) belong to the critical materials. They contain 17 elements, which are very similar in terms of their chemical and physical properties due to their mineralogical structure (the most known are lanthanum and thorium, that is radioactive). REE are divided into elements with a lower atomic mass and those elements with a higher atomic mass. The heavier metals show a significantly lower presence in the upper earth crust. Permanent magnets containing neodymium, gadolinium, dysprosium are used in numerous electrical components and generators for wind turbines. Besides of rare earth elements the platinum group of metals and cobalt belong to the critical metals. The European Commission was prepared the strategic development plan for the critical metals in next twenty years. Critical metals are driving of the biggest advancements in technology and energy efficiency in modern life.

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OBESITY AS A GROWING PROBLEM IN OUR REGION

The world wide prevalence of obesity nearly doubled between 1980. and 2008. In addition to harming the health and well-being of the adult population and generating large expenditures by health services, obesity has a striking and unacceptable impact on children that are bringing up in an obesogenic environment in which the forces behined sedentary behaviour and unhealthy eating habits are growing, even in the traditionally Mediterranean countries. A large mismatch exists between the magnitude of the obesity epidemic and the achievements of the innumerable public health programs performed to address the problem of excess weight in the population. Based on the latest estimates in European Union countries, overweight affects 30-70% and obesity affects 10-30% of adults. According to data from two Croatian Adult Health Survey (CAHS) cycles, the burden of obesity in Croatia, is also inceasing. The first CAHS cycle in 2003. covered a planned representative sample of 10 766 persons over the age of 18 from six Croatian regions (North, South, East, West and Central regions, and the City of Zagreb). During the second survey cycle in 2008, visiting nurses reinterviewed the same respondents at their homes. Data showed that 20.37% of Croatian adults are obese (20.14% of men and 20.60% of women). The largest share of obese population belongs to the 45-54 age group; specifically 27.85% men and 32.82% women. The lowest share of obese adults come from the West region (15.54%), the highest from the North (25.59%). The average annual rate of increase in the prevalence of obese adults between 2003. and 2008. was 10.60% for men, 11.08% for women. Age and frequent consumption of „hidden" fats of animal origin in both sexes are predictors of obesity both nationally and regionally. So, there is a need for more vigorous implementation of strategies aiming to prevent obesity.

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VIMINACIUM – ARCHÄOLOGISCHER PARK, ENTWICKLUNG UND PERSPEKTIVE

Seitdem der archäologische Park Viminacium im Jahr 2006 eröffnet wurde, sind seinen Besuchern insgesamt fünf größere Punkte zugänglich: 1) das Nordtor des Militärlagers Viminacium, 2) das römische Bad (die Thermen), 3) das Mausoleum, wahrscheinlich des Kaisers Hostilians, 4) das Handwerkszentrum und 5) das Mammutskelett.

Darüber hinaus entwickelt sich gerade auch eine weitere Attraktion, nämlich das Wissenschafts- und Forschungszentrum, der sogenannte *Domus Scientiarum*. Es wurde in der Form einer römischen *villa rustica* gebaut, die die Atmosphäre des antiken Roms wiederspiegelt. Die Anlage beinhaltet zwei Niveaus: Das obere, mit mehreren Atrien, um die herum Büros, Labors und Unterkunftszimmer für die Team-Mitglieder und Besucher liegen, sowie das untere Niveau, mit einem Museumsraum, einer Kongresshalle und einigen Depots.

Ein Objekt dieser Art ist bislang einzigartig und richtet sich in seiner Funktion vor allem an ein internationales Wissenschaftspublikum. Hier können Sommerschulen, Kongresse und Symposien organisiert werden, oder auch mit Schulkindern und Studenten/Innen archäologische Workshops durchgeführt werden.

Im März 2006 wurde in etwa 3 km Entfernung zum archäologischen Park an der Donau eine Landestelle eingerichtet, wo Schiffe anhalten können, um Besucher mit Bussen nach Viminacium zu fahren. Seither ist vor allem die Zahl ausländischer Besucher stark angestiegen.

Da in diesem Areal ebenso ein Dutzend keltisch-skordiskischer Gräber aus dem 4. und 3. Jhdt.v.Chr. entdeckt wurde, ergeben sich daraus Planungen für die Rekonstruktion eines keltischen Dorfes, mit einer Verteidigungsmauer, einigen Häusern und Werkstätten.

Nach seiner Fertigstellung wird es den Besuchern der Region somit möglich sein einen umfassenden Einblick in den Alltag der Antike zu erhalten. Neben der römischen Hochkultur wird dieser dann auch Aspekte der keltischen Welt umfassen.

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BULGARISCHE UND SERBISCHE PARALLELÜBERSETZUNGEN AUS DEM GRIECHISCHEN IM MITTELALTER

In der zweiten Hälfte des 13. und am Anfang des 14. Jh. fand in Byzanz eine Ersetzung des Buches statt, welches das kirchliche Leben und die gottesdienstlichen Ordnung regelt. Das studitische Typikon wurde allmählich vom Jerusalemer Typikon verdrängt, und damit wurden auch die bisherigen liturgischen und paraliturgischen Bücher ersetzt. Durch die Verbreitung der neuen Texte in der Praxis der griechischen Klöster geriet das slavische Mönchtum auf dem Athos ins Hintertreffen. Deswegen wurden die benutzten gottesdienstlichen Bücher gründlich redigiert oder neu übersetzt und darüber hinaus viele mit dem Jerusalemer Typikon verbundene Textsammlungen erstmals übertragen. Dieser Prozess breitete sich auch außerhalb des Heiligen Berges in den Übersetzungszentren in Bulgarien und Serbien aus. Als Ergebnis dieser Tätigkeit entstanden im 14. Jh. auf dem Balkan Parallelübersetzungen einer Reihe von kirchlichen Büchern und Text-sammlungen, unter anderem vier Übersetzungen des Jerusalemer Typikons, zwei vollständige und eine partielle Übersetzung des byzantinischen Verssynaxars (des slavischen Versprologs), drei Übersetzungen und eine gründliche Redaktion der Synaxarien zum Triodion und Pentekostarion sowie drei neue Fassungen der Lestvica (Scala paradisi) von Johannes Klimakos.

Im Vortrag werden die Gründe für das Phänomen der Parallelübersetzungen und die möglichen Herangehensweisen bei seiner Erforschung analysiert. Mit einigen konkreten Beispielen wird das Forschungspotenzial dieser Texte veranschaulicht. Der Schwerpunkt liegt dabei auf einer kontrastiven Charakteristik der Übersetzungsprinzipien und Übersetzungstechniken in verschiedenen Zentren auf dem Balkan im Jahrhundert vor der osmanischen Eroberung.

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PROJECT VINČA – REGIONAL IMPLICATIONS

Archaeological investigations at Vinča last more than a century. During this time four generations of experts have been in the position to work there. In the course of past fourteen years Project Vinča has grown into an important research focal point which has attracted dozens of colleagues from Serbia and abroad in a joint multidisciplinary endeavor. The importance of the site of Vinča for archaeology is well known since 1908, when the first researcher had published his findings in European journals. Since those days well preserved cultural horizons which span over the most of last 7500 years have yielded abundant archaeological material and numerous samples and results which are of interest to other scientific disciplines such as geology, geography, environmentology, bioarchaeology, archaeozoology, climatology, metallurgy, but also to tourismology and heritology and IT.

Currently, the two strands of research are preoccupying the team: extensive dating or the site of Vinča within the project *Times of their lives* (A. Whittle and A. Baylis as chief researchers) and the Neolithic volume of the *Prehistory of the Banat* (with F. Draşovean and N.N. Tasić as editors). The first is focusing on collection of representative samples for radiocarbon dating and the latter on implications of the site of Vinča to the Banat region in prehistory. Being already recognized as a yardstick for the Prehistory of the Southeast Europe the site of Vinča with new 200 of 14C dates will contribute even more to our understanding of the processes in human societies in the Neolithic and the Copper Age, and will provide chronologically well placed samples for different scientific disciplines.

The Project Vinča is also encouraging methodological and technological innovations in heritology. The site of Vinča and its research team are the part of the project *Contributing the Preventive Archaeology: Innovativeness, Development and Presentation* with partners from Slovakia, Czech Republic and Slovenia as the key site in a FP7 project Marie Curie, Industry-Academia Partnerships and Pathways, which will focus on contemporary procedures for excavating, recording, and presentation of cultural heritage.

During last 14 years the site of Vinča has been also the host for International Archaeological School where students and colleagues from the region and the rest of the world have been in the position to hear lecturers from different scientific disciplines.

The future activities of the Project will include publication, presentation and dissemination of the knowledge accumulated in the century long history of research at Vinča.

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FLEXNET WIDE AREA MONITORING SYSTEM

An optimal utilization of power system assets is one of larges challenges nowadays. Achieving this target, a significant CO2 reduction can be reached. Utilization of novel emerging technology (sensors, information and Communication Technology etc.) are a strong enabler of the optimal utilization of power system assets. This paper presents the results of collaborative research from the SUPERGEN FlexNet Consortium into Wide Area Monitoring, Protection and Control (WAMPAC). The focus of the research addresses the design and development of an optimal WAMPAC architecture, communication infrastructure and real-time WAMPAC applications which will play an important role in future GB power network operation and understanding. From the architecture presented can be concluded that the system presented goes beyond the GB power system and demonstrates its integration into the existing European WAMPAC system. The paper concludes with an assessment of inter-area oscillations based on data records captured by the wide area monitoring system (WAMS) established as part of the FlexNet project.

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PRESERVATION OF THE HISTORICAL ASTRONOMICAL OBSERVATIONS OF THE DANUBE COUNTRIES

The preservation, ddigitization and on line access to historical astronomical photographic observations are the research subjects conducted at the Institute of Astronomy, BAS, with the support of the Alexander von Humboldt Foundation during the last two decades. The created for this purpose Wide-Field Plate Database (wfpdb.org) gives information on over 600,000 individual astronomical plate observations done for more than 130 years. In the current version of the Catalogue of Wide-Field Plate Archives (CWFPA, v.5.8 http://wfpdb.org/data/Cat5.8.xls) data about more than 2400000 separate observations are summarized. A significant number of them were done in Danube countries: Germany, Austria, Slovakia, Serbia, Romania and Bulgaria. In this presentation we discuss the contribution of individual countries in the Danube region to the considered scientific problem, as well as the future steps and tasks to achieve the objectives.

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REFLECTIONS ON SCIENTIFIC COLLABORATION

Cooperation in the Danube Region is a special endeavour as it combines cluster formation with international collaboration. While the success of innovative clusters is determined by local proximity, international scientific collaboration crosses borders, and the river Danube seems to mix both modes. In line with this recognition of different types of collaboration, this paper reflects on the nature of scientific collaboration and its diversity. The notion of 'co-laboring' can be seen as the literal roots of collaboration. Definitions of scientific collaboration vary from broad definitions involving co-working to more delimited definitions requiring teamwork with shared goals. In addition, scientific collaboration can be informally organised or firmly institutionalized. To date, two main approaches have dominated the study of collaboration. Bibliometric analyses catalogue rising rates of collaboration, interdisciplinarity, geographic dispersion, and cross-national cooperation, but are too abstract and too far afield from knowledge production contexts to meaningfully analyze key social structures, processes and relationships central to collaborative scientific work. Qualitative analyses detail precisely such social processes and relationships, asking mainly why and how collaboration takes place? These apparently simple questions are difficult to answer. Based on extensive qualitative study of scientific collaboration, especially in the life sciences, this paper will give more insight in reasons and structures of collaboration. By showcasing different forms of collaboration, it will help to develop collaborative opportunities.

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PRODUCTION OF BIODIESEL: RESOURCES OF THE DANUBE REGION

The world population will rise to 9.1 billion by the year 2050 from the current 7 billion. As the population grows, ever increasing amount of energy will have to be used to maintain our style of life and 85% of this energy is produced by combustion of fossil fuels. It took 60 million years for fossil fuels to develop. Now we are releasing this 60 million year accumulation of carbon back into the atmosphere in just 200 years or so, causing a large misbalance in the amount of carbon dioxide released and re-adsorbed. It led to the misbalance in the carbon cycle and caused the greenhouse effect and global warming. One of the options to restore the carbon balance is to make fuels using carbon from our modern-day plants, rather than carbon from plants that lived on the planet in prehistoric times.

In essence, biofuel is a solar energy. Plants use the sun's energy and CO_2 to synthesize organic compounds such as oil, which is then accumulated in their seeds. This oil can then be extracted and transformed into biodiesel. The most common process for making biodiesel is the transesterification of triglycerides from vegetable oils with methanol. The countries in the Danube region are large world producers of vegetable oils and therefore there is a significant potential of the Danube region for the biodiesel production.

However, vegetable oil is an expensive raw material and there are ethical concerns regarding the use of a potential food source as fuel. As a result alternative raw materials have been investigated and these include non-edible oils, by-products from oil refining, and used cooking oil (UCO). This lecture is focused on the production of biodiesel from UCO using *Candida antarctica* Lipase B, an enzyme immobilized on acrylic resin. The original experimental data obtained in our laboratory will be presented.

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DAS PANNONISCHE ATLANTIS ODER VERLORENES KULTURGUT DER DEUTSCHEN MINDERHEIT AM DONAUFLUSS DURCH SERBIEN

Die im Titel enthaltene, von Nenad N. Stefanović stammende Bezeichnung ist mit der Vorstellung verbunden, ein bis zur Unkenntlichkeit abzusinken drohendes dennoch aber erahnbares Kulturgut festhalten zu wollen. Die vorliegende Arbeit beschäftigt sich mit dem deutschen Kulturausdruck im Einzugsgebiet der Donau in der Vojvodina. Untersucht wird die Ausbildung eines für die deutsche Minderheit im erwähnten Gebiet spezifischen gesellschaftlichen Bewusstseins. Eine grundsätzlich abgeänderte Rezeption des Gesellschaftslebens bedingt durch deren Lage und den spezifischen historischen Umständen hatte einen gesonderten Einfluss auf die Bestimmung der deutschen Identität im Donaugebiet. Die Vielzahl unterschiedlicher Kulturformen im mittleren und unteren Donaufluss, dem Einzugsgebiet deutscher Siedler ab dem 17. Jahrhundert, führte unausweichlich zu deren gegenseitigen Durchdringung. Von Standpunkten aus der Diskussion um eine Erinnerungs-literatur und Kultur und deren Pflege ausgehend, sollen die im gegenständlichen Umfeld als deutsch zu charakterisierenden Merkmale ausgearbeitet werden. Es soll dadurch eine bessere Einsicht in jene Segmente geboten werden, wie und in wieweit Kultureinflüsse miteinander verschmelzen, ihr eigenes Gepräge gleichzeitig dabei bewahrend. Anhand der Beschreibung von Prozessen des Kulturtransfers, der Durchdringung von Traditionen und Bräuchen sollen die Merkmale einer spezifischen Identität beleuchtet werden, die mit diesem Gebiet eng verbunden sind. Im Spektrum der unterschiedlichsten Kulturausdrücke gilt es den Anteil des deutschen Erbes, natürlich ebenso mittels Erinnerungskultur zu sichern. Hier gilt es, die nicht leichte Aufgabe der durchzuführenden Unterscheidung zu bewältigen, zwischen einerseits den zivilisationsgeschichtlichen Einflüssen in der Vojvodina vom Ende des 18. und im 19. Jh. auf die serbischstämmige Bevölkerung und deren herausgebildetem Kulturverständnis und andererseits des historisch ursprünglich aus dem deutschen Kulturraum stammenden Erfahrungshorizontes in Bezug auf das Einzugsgebiet der Donau in der Vojvodina.

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ERUFOSINE (ERUCYLPHOSPHO-N,N,N-TRIMETHYLPROPYLAMMONIUM) AFFECTS PKB/AKT AND JNK IN HUMAN ACUTE MYELOID LEUKEMIA CELL LINES

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There is a clear need for new effective drugs in the treatment of acute myeloid leukemia (AML). Erufosine (erucylphospho-N,N,N-trimethylpropylammonium, ErPC3) is a tird generation alkylphosphocholine that could be administrated intravenously without causing haemolysis, therefore being very promising in leukemia treatment. Erufosine affects multiple signal transduction networks, inducing apoptosis and cell cycle block but the exact mechanisms underlying its antitumor activity have not been completely elucidated.

Aim of the current study was to evaluate the antileukemic potential of ErPC3 in AML cell lines and to estimate the impact on the expression of proteins involved in the signal transduction pathways for proliferation and apoptosis.

In vitro experiments were performed using three AML derived cell lines: eosinophilic leukemia EOL-1, NOMO-1 (AML FAB M5a; cells carry the t(9;11)(q23;p22) MLL-MLLT3 (MLL-AF9) alteration) and U-937 (histiocytic lymphoma; cells express markers and properties of monocytes). The cytotoxicity of ErPC3 was measured by the colorimetric MTT-assay and IC_{50} values were estimated after different incubation times (24, 48 and 72h). Western blot analysis elucidated the expression pattern of PKB/Akt, pAkt, JNK, Bcl-2 and Lamin B.

Erufosine was found to cause dose-dependent cytotoxicity in all studied cell lines with the lowest IC_{50} value of 2,2 μM after 72h of treatment in EOL-1, followed by NOMO-1 (IC_{50}=2,9 μM), while the relatively less sensitive cell line was U-937 (IC_{50}=4,76 μM). Changes in the signal pathways (e,g. PKB/Akt, JNK and Bcl-2) were shown to be

important molecular targets for the antineoplastic activity of the alkylphosphocholine, as previously described for other alkylphosophocholines. Furthermore, our experiments showed down-regulation of pAkt, JNK alteration and lamin B fragmentation, which are apoptosis associated findings. Taken together these observations suggest that modulation of the PKB/Akt and JNK pathways may be an important mechanism underlying the pharmacological effects of erufosine. Further investigations of the targeted genes and signaling pathways are warranted.

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ROLE OF MIGRATING WHITE PELICANS (*PELECANUS ONOCROTALUS*) ON THE DISSEMINATION OF MEDICALLY IMPORTANT ZOONOTIC PATHOGENS ALONG THE EAST-EUROPEAN FLYWAY

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The migration of birds could be a reason for the wide geographic dissemination of bacterial species that cause food and waterborne zoonoses being frequently reported as possible vectors of human pathogens through excrements or ectoparasites. Aim of the current study was to investigate the role of White Pelicans (*Pelecanus onocrotalus*) migrating along the East-European flyway in the dissemination of some medically important zoonotic pathogens.

A total of 43 White Pelicans were sampled during autumn migration (September) at a stopover wetland along the Southern Black Sea Coast (Bulgaria) and used for detection of pathogens by both culture and PCR methods. The samples were plated *in situ* onto selective agar media for *Campylobacter spp.*, *Yersinia spp., Francisella tularensis* and chromogenic agar for *Escherichia coli.* Six Gram (-) strains showing urease activity were tested for *Yersinia spp.* with the API 20E system. Suspected colonies for *Campylobacter spp.* were microscopically analyzed, while those suspected for *F. tularensis* were examined by immunofluorescent microscopy using FITC-labelled specific antisera. Faecal DNA was isolated by using the QIAamp DNA Stool Mini Kit (Qiagen) and analyzed by conventional and multiplex PCR. Six *Campylobacter* strains (23.4%), two of which *C. jejuni* (7.8%) and one *C. coli* (3.9%) were isolated from all the faecal specimens. Five strains of *E. coli* (19.5%), one of which EPEC (3.9%) and one ETEC (3.9%) were isolated too. Bacteria belonging to *Yersinia spp.* and *Francisella tularensis* were not isolated. PCR assay indicated ten positive samples for *Campylobacter spp.* (39%), four of which specific for *C. jejuni* (15.6%) and 3 specific for *C. coli* (11.7%). Two pathogenic *E. coli* that carry the genes encoding Eae (EPEC) and the enterotoxin LT (ETEC) respectively, were identified by multiplex PCR.

In conclusion, migrating pelicans may constitute a reservoir of pathogens and should be associated with food- and waterborne infections.

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UTILIZATION OF FLY ASH BYPRODUCTS FROM THE COAL COMBUSTION IN ENVIRONMENTAL PROTECTION SYSTEM

The main energy source for electricity production in Bulgaria are the local lignite coals by the „Maritza East'' basin. Their utilization in conventional Thermal Power Plants (TPP) provides 40 % of totally produced energy in Bulgaria in 2011. The incineration of pulverized fossil fuel generates ash residues consisting of 80 % fly ash (FA) and 20 % slug. For the European Union (EU) the amount of FA residues by TPP overcomes 34 million tons per year. FA is a serious environmental pollutant, especially for the hydrosphere and lithosphere. In last decades different approaches for its conversion in valuable products have been developed. Unfortunately, the utilization of FA in EU is less than 25 % of the totally generated residue, which means that 25.5 million tons of FA are annually disposed in open land areas. The integration of large-scale technologies for utilization and significant reduction of the unused FA proportion is a matter of great importance of all countries producing electricity by coals. In the recent years, hard work has been done towards the FA conversion in synthetic zeolite materials favoured by its major components, namely 52-90 % aluminosilicates (for FA produced in Europe). Generally, the synthesis of zeolites is a transformation of the aluminosilicate glass in crystalline phases under the influence of alkalizing agents. The zeolites are high porous materials with variable pore size for different zeolite types (2.1 Å to 7.3 Å for A, X and Y zeolites), which make them suitable especially for molecular sieves. These pore sizes allow the adsorption of large gaseous molecules, such as NH_3, H_2, Cl_2, N_2, SO_2, CO, CO_2, CH_4, etc., which diameters are in the range 2.5 Å-5.1 Å.

The present research is emphasized on the possibility for conversion of FA derived from the burning of lignite coals in TPP „Maritza-East 2'' in Bulgaria in large porous zeolites. The FA is thoroughly investigated with respect of its chemical composition, morphology and structure, and it was found to contain 52.66 wt.% SiO_2 and 23.37 wt.% Al_2O_3, as the amorphous phase is presented in 43 %. To obtain zeolites, the FA was passed through primary fusion stage (calcinations with NaOH) and subsequent classical hydrothermal synthesis. Syntheses were carried out under different conditions varying the fusion temperatures and the time of hydrothermal treatment. The nature of the obtained synthetic materials was proved by the help of Scanning electron microscopy (SEM-EDX) and X-ray diffraction (XRD) analyzes. The obtained results clearly showed strong influence of the synthesis conditions on the type and the yield of the synthetic zeolite. Increasing the time of the hydrothermal synthesis, which is the time required for the crystallization of the amorphous phase, the formation of more stable zeolite forms is expected, thus Zeolite X transforms in Zeolite A. The ratio of Si/Al, measured on the

surface of the rezultant phases, decreases when the fusion temperature is increased: Si/Al = 1.56 at t=550 ^{o}C; Si/Al = 1.46 at t =750 ^{o}C and Si/Al=1.46 at t =850 ^{o}C. This result reveals that the elevation of the fusion temperature to a certain level increases the solubility of the Al^{3+}-ions from the raw FA. The longer hydrothermal syntheses result in reduction of the content of Al and Si species, as well as in increase of Na in the material surface layer. It was revealed by SEM analyses that at elevated fusion temperature and longer hydrothermal time, while other synthesis conditions were kept constant, crystals with larger geometric dimensions were obtained. Zeolite crystals with average sizes of 1.025 μm, 1.784 μm and 2.529 μm were obtained by fusion at 550 °C, 750 °C and 850 °C, correspondingly, providing hydrothermal synthesis for 4 h. As a result of the performed experiments, the highest degree of zeolitization of FA was observed at 1/2 ratio of FA/NaOH.

PROGRAMM / PROGRAMME

Mittwoch / Wednesday, 12/6/2013

Belgrader Universität, Rektorat/ University of Belgrade
Hall A
Address: Studentski trg 1

17:00	**Anreise / Arrival**
18:00-19:30	Anmeldung / Registration ***Fotoausstellung „Die Donau – Made in Germany“/ Exhibition: „The Danube - Made in Germany“***
19:30-21:00	Empfang, unterstützt durch den Botschafter der Bundesrepublik Deutschland in Serbien / Reception supported by German Ambassador in Serbia

Donnerstag / Thursday, 13/6/2013

Serbische Akademie der Wissenschaften und Künste, SAWK, Festsaal
Serbian Academy of Sciences and Arts, Festive Hall
Address: Knez Mihailova 35/II

9:00-10:00	**Anmeldung / Registration**
10:00-10:30	Eröffnung und Begrüßungsworte / Opening Ceremony **Chairperson: Prof. Dr. Luka Č. Popović**
10:30-11:00	**Prof. Dr. Erhard Busek,** Vorstandsvorsitzender Institut für den Donauraum und Mitteleuropa (IDM), Austria**:** ***Regional cooperation as a precondition for ecologic sustainability***
11:00-11:30	**Kaffeepause / Coffee Break**
	Session 1: ***Ecological integrity and water management in the Danube river basin*** **Chairperson: Prof. Dr. Jovan Jovanović**
11:30-12:00	**Prof. Dr. Jan Schwarzbauer,** Institute of Geology and Geochemistry of Petroleum, Germany**:** ***Organic pollutants in rivers***
12:00-12:30	**Prof. Dr. Vidojko Jović,** SANU, Serbia**:** ***Trace elements in recent sediments of the Danube river in Eastern Serbia and environmental impact***
12:30-13:00	**Prof. Dr. Fritz H. Frimmel,** Karlsruhe Institute of Technology, Germany**:** ***Water Quality - Basis For Life***
13:00-13:30	**Dr. Borislav Grubor,** University of Belgrade, Serbia: ***Utilization of baled biomass for energy purposes in Serbia, and possible reflection on countries of Danubian region***
13:30-14:30	**Mittagessen / Lunch Break**

Belgrader Universität, Rektorat, Festsaal (Saal A und Saal B) / University of Belgrade (Hall A and Hall B)
Address: Studentski trg 1

	Hall A	Hall B
	Session 2: ***Renewable energy resources in the Danube Region*** **Chairperson: Prof. Dr. Mirko Komatina**	**Session 3:** ***Remarkable importance of Danube area: archeology and history*** **Chairperson: Academician Prof. Dr. Ljubomir Maksimović**
14:30-15:00	**Prof. Dr. Zoya Popović,** University of Colorado at Boulder, USA: ***Approaches for reducing power consumption for wireless communications***	**Prof. Dr. Nenad Tasić,** University of Belgrade, Serbia: ***The Vinča Project – regional implications***
15:00-15:20	**Prof. Dr. Riscard Marschalko,** Technical University of Cluj, Romania: ***Application possibilities in the trans Danubean region of the low and medium power processors for grid and user-friendly energy conversion***	**Prof. Dr. Dietmar Goltschnigg,** Karl-Franzens-Universität Graz, Austria: ***Die Aktualisierung von „Robert Musils „KAKANIEN" im heutigen (Mittel)-Europäischen Kontext***
15:20-15:40	**Prof. Dr. Branimir Jovančićević,** University of Belgrade, Serbia**:** ***Oil polution in Danube Region (Serbia)***	**Prof. Dr. Miroslav Marić,** SANU, Serbia: ***The Vinča culture – climate and environment in the Danube region in the 6th and 5th millenium B.C.***
15:40-16:00	**Prof. Dr. Srećko Stopić,** Technische Hochschule Aachen, Germany**:** ***Critical metals and their importance in modern life***	**Prof. Dr. Milcho Tsvetkov,** Institute of Astronomy with NAO, Sofia, Bulgaria: ***Preservation of the historical astronomical observations of the Danube countries***
16:00-16:15	**Denitca Zgureva,** Technical University of Sofia, Bulgaria**:** ***Utilization of fly ash byproducts from the coal combustion in environmental protection systems***	**Dr. Petru Enciu,** Institute of Geography of Romanian Academy, Bucharest, Romania: ***Lower Danube Valley - Structure and the Evolution along the Romania-Serbia boundary***
16:30	**Bus transfer to the boat**	
17:00-21:00	***„Geniessen Sie die Donau" - Kulturelles Programm auf dem Schiff, Kreuzfahrt auf der Donau / „Enjoying with Danube" - Cultural program at the boat, cruise on the Danube***	

	Dr. Zoran Živković, *Autor des Buches Die Fünf Wunder der Donau /* **Dr. Zoran Živković**, *the author of The Five Wonders of the Danube* **Dragoljub Zamurović** *der Autor der Ausstellung „Dunav-made in Germany“* / **Dragoljub Zamurović** *the author of the exhibition „Dunav-made in Germany“*

Freitag / Friday, 14/6/2013

Belgrader Universität, Rektorat, Festsaal (Saal A und Saal B) / University of Belgrade (Hall A and Hall B)
Address: Studentski trg 1

	Hall A	Hall B
	Session 4: ***Danube Region Integration in Education and Science*** **Chairperson: Prof. Dr. Banimir Jovančićević**	**Session 5:** ***Cultural Heritage and its Diversity: Danube Region Development Potential (Part 1)*** **Chairperson: Prof. Dr. Gordana Jovanović**
9:30-10:00	**Prof. Dr. Yurii Naidyuk,** B.Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine: ***Nanophysics - wealth “at the bottom“***	**Prof. Dr. Tatjana Cvjetićanin,** National Museum, Belgrade, Serbia: ***Frontiers of Roman Empire World Heritage Site - potential nomination of the Danube river frontier of Moesia Superior***
10:00-10:20	**Dr. Oksana Kvitnitskaya,** National Academy of Sciences of Ukraine: ***Point-contact spectroscopy of modern superconductors***	**Srđan Gavrilović, dipl.ing,** A+ ARCHITECTURE, Belgrade, Serbia: ***Belgrade at the confluence of influences***
10:20-10:40	**Prof. Dr. Darko Modun,** University of Split School of Medicine, Croatia: ***Oxigen - medication with side effects***	**Dr. Biljana Stanković,** Department of Psychology, Faculty of Philosophy, University of Belgrade: ***Medical practice in transition: The case of Serbian maternity care services and their users***
10:40-11:00	**Kaffeepause / Coffee Break**	
	Sessions 4 and 5, continued	
11:00-11:20	**Prof. Dr. Dorel Banabic,** Technical University of Cluj Napoca, Romania: ***Trends in virtual manufacturing***	**Prof. Ulrich Hambach**, University of Bayreuth, Bayreuth, Germany : ***Danube loess – the best preserved European terrestrial record of climatic and environmental changes during the last one million years***
11:20-11:40	**Prof. Dr. Milka Glavendekić,** Faculty of Forestry, University of	**Aleksandar Krstić, dipl.istoričar,** OŠ Filip Filipović, Belgrade:

	Belgrade**:** ***Scientific and educational cooperation between Germany and Serbia in the field of environmental protection***	***Danube as a geopolitical and cultural factor of divisions and mergings between Central and South-Eastern Europe***
11:40-12:00	**Prof. Dr. Dan Lucian Dumitrascu,** Medical faculty, University Cluj, Romania: ***Teaching medical communication to improve the curricula of medical students and the practical skills***	**Prof. Dr. Lora Taseva,** Bulgarian academy of sciences, Sofia, Bulgaria: ***Bulgarische und serbische Parallelübersetzungen aus dem Griechischen im Mittelalter***
12:00-13:30	**Mittagessen / Lunch**	
	Session 6: ***Health and Humanity Issues in the Danube Region (Part 1)*** **Chairperson: Prof. Dr. Marija Gavrović-Jankulović**	**Session 7:** ***Cultural Heritage and its Diversity: Danube Region Development Potential (Part 2)*** **Chairperson: Prof. Dr. Slobodan Savić**
13:30-14:00	**Prof. Dr. Marta Ljubešić,** University of Zagreb, Croatia: ***Early childhood intervention: can we cooperate better?***	**Prof. Dr. Miroslava Mirković,** University of Belgrade, Serbia: ***Die Donau als Grenze und Verbindungslinie zwischen Völkern und Nationen***
14:00-14:20	**Prof. Dr. Jasmina Marković-Lipkovski,** University of Belgrade, Serbia: ***Morphology of Balkan endemic nephropathy: Current state for the last 10 years***	**Dr. Đorđe S. Kostić,** Institute for Balkan Studies SASA, Serbia: ***Das enzyklopädische Bild der Donau im 18. und 19. Jh.***
14:20-14:40	**Prof. Dr. Claudia Müller,** University of Tübingen, Germany: ***HLA and disease susceptibility***	**Dr. Milica Tapavički-Ilić,** Institute of Archaeology, Belgrade, Serbia: ***Viminacium – archäologischer Park, Entwicklung und Perspektive***
14:40-15:00	**Prof. Dr. Zoran Stajčić,** Dental/Medical Center for Maxillofacial Surgery «Beograd-centar» Belgrade, Serbia: ***Dental implants on a global market***	**Prof. Dr. Marian Jaskula,** Jagiellonian University, Krakow, Poland: ***Jagiellonian University in Cracow and its experiences in implementation of Bologna Regulations***
15:00-15:20	**Dr. Dessislava Jereva,** Institute of Biophysics and Biomedical Engineering, Sofia, Bulgaria: ***Comparative study of human estrogen receptor alpha structural complexes for the purposes of virtual ligand screening***	**Dr. Miodrag Vukčević,** University of Belgrade, Belgrade, Serbia: ***Das pannonische Atlantis oder verlorenes Kulturgut der deutschen Minderheit am Donaufluss durch Serbien***

15:20-15:40	**Prof. Dr. Thomas Griesbacher**, Medical University of Graz, Austria: ***Pharmacology in Europe***	**Prof. Dr. Eva Jakab,** Szeged University, Hungary: ***Rechtshistorische Wurzeln des Europäischen Privatrechts: Wissenschaftliche Zusammenarbeit und Nachwuchsförderung im internationalen Netzwerk***
15:40-16:00	**Kaffeepause / Coffee Break**	
	Session 8: ***Environmental, Agricultural and Food Issues in the Danube Region*** **Chairperson: Prof. Dr. Slobodan Marković**	**Session 9:** ***Health and Humanity Issues in the Danube Region (Part 2)*** **Chairperson: Prof. Dr. Jasmina Marković-Lipkovski**
16:00-16:30	**Prof. Dr. Marc Hanewinkel**, Swiss Federal Research Institute WSL, Switzerland: ***Impact of climate change to European ecosystems – the example of forest ecosystems***	**Prof. Dr. Gerhard Müller,** Univ. Göttingen, Medizinische Fakultät, Germany: ***Metabolic Syndrome - an increasing problem worldwide***
16:30-17:00	**Prof. Dr. Milan Dimkić,** Jaroslav Černi Insitute for the Development of Water Resources, Belgrade, Serbia: ***Water management in Danubian countries in transition***	**Prof. Dr. Spiro Konstantinov,** University Sofia, Bulgaria: ***Recent oncopharmacological research activities as basic for drug development***
17:00-17:30	**Prof. Dr. Goran Vladisavljević**, Loughborough University, UK: ***Production of biodiesel: resources of the Danube Region***	**Prof. Dr. Nikolai Lazarov,** Medical University, Sofia, Bulgaria: ***Body Explorer 3.0: An interactive multilingual web system for studying cross-sectional anatomy***
17:30-17:50	**Dr. Ivana Ivančev-Tumbas,** University Novi Sad, Serbia; **Dr. Ralph Hobby**, University Duisburg - Essen**:** ***Organic pollutants in water-challenges and opportunities***	**Prof. Dr. Davor Štimac,** Division of Gastroenterology, Croatia: ***Obesity as a growing problem in our region***
17:50-18:10	**Dr. Jelena Nedeljković**, University of Belgrade, Serbia: ***Management of natural protected areas in Serbia - National Park Djerdap***	**Prof. Dr. Ljiljana Gojković-Bukarica,** University of Belgrade, Serbia: ***The beneficial effects of plant polyphenols on human health***
18:10-18:30	**Prof. Dr. Slobodan Jović,** University Belgrade, Serbia: ***Wine: Symbolic and real significance***	**Assist. Dr. Janko Samardžić,** University of Belgrade, Serbia: ***Behavioural characterisation oftrans-resveratrol effects in rats***
20:30	**ABENDESSEN / CONFERENCE DINNER**	

Samstag / Saturday, 15/6/2013

Belgrader Universität, Rektorat / Belgrade University, Hall A
Address: Studentski trg 1

	Offen für die Öffentlichkeit / Opened to the public **Session 10:** ***Alexander von Humboldt-Stiftung / Alexander von Humboldt Foundation*** **Chairperson: Representative from the Alexander von Humboldt Foundation**	
10:00-10:45	**Dr. Gisela Janetzke & Mrs. Guelay Sagirli,** AvH Foundation, Germany: ***Doing Research in Germany – Fellowships for Highly Qualified Postdocs and Experienced Researchers***	
10:45-11:15	**Kaffepause / Coffee break**	
	Chairperson: Prof. Dr. Ivanka Popović	
11:15-11:40	**Dr. Frens Stöckel**, Der Deutsche Akademische Austausch Dienst (DAAD): ***Major developments in the European and German Higher Education sector during the last 15 years with a focus on internationalization and student/researcher mobility***	
11:40-13:00	Diskussion Runder Tisch / Discussion – Round table (with presentations) ***Possible collaboration among scientists from Danube region*** • **Prof. Dr. Ivanka Popović**, Pro-Rector of the University of Belgrade for Science • **Prof. dr. Radomir Žikić**, Deputy Minister, Sector for European Integration, Research and Developmental Programmes and Projects in Education and Science • **Prof. Dr. Vera Dondur**, President of the National Council for Science • **Dr. Frens Stöckel**, Director of the German Academic Exchange Service (DAAD)	
13:00-14:30	**Mittagessen / Lunch**	
	Session 11: ***Science and Research in the Danube: present and future*** **Chairperson: Prof. Dr. Ljiljana Gojković-Bukarica**	**Session 12:** ***Cooperation and integration in Danube region*** **Chairperson: Dr. Melita Vidaković**
14:30-15:00	**Academician Prof. Dr. Vladimir Kanjuh,** University of Belgrade, Serbia: ***Correlation of hystopathological degrees of atherosclerosis with clinical coronary syndromes***	**Dr. Niki Vermeulen,** The University of Manchester, United Kingdom: ***Reflections on Scientific Collaboration***
15:00-15:20	**Academician Prof. Dr. Nebojša Lalić,** University of Belgrade, Serbia: ***Incretin-based therapy in type 2***	**Prof. Dr. Milan Dimitrijević,** Astronomical Observatory, Belgrade, Serbia**:** ***Collaboration between Serbia,***

	diabetes: Relevance for glucose control and body weight	***Bulgaria, Romania and Hungary in Astronomy***
15:20-15:40	**Prof. Dr. Vladimir Srdić,** University of Novi Sad, Serbia: ***Ceramical core/shell particles in modern society***	**Dr. Momir Paunović**, IBISS, Belgrade Serbia**:** ***The Danube expeditions***
15:40-16:00	**Prof. Dr. Ida Leskošek-Čukalović,** University of Belgrade, Serbia: ***Beer function properties***	**Dr. Đorđe Miljković,** IBISS, Belgrade**,** Serbia: ***Neuroimmunology by the Danube***
16:00-16:15	**Dr. Goran Dobrić**, Faculty of Electrical Engineering, University of Belgrade, Serbia: ***Solar Energy: Potential, Possibilities and Application***	**Dr. Dragana Ilić**, University of Belgrade, Serbia: ***Astromundus, Erasmus Mundus cooperation of Danubian countries: Germany, Austria and Serbia***
16:15-16:30	**Dr. Ferenc Kiss,** Faculty of Technology, University Novi Sad, Serbia: ***Limitations of present legal framework and incentives for the production and exploitation of biofuels in Serbia***	**Dr. Ivan Jarić,** Institute for Multidisciplinary Research, University of Belgrade, Serbia: ***Sturgeon conservation and management cooperation activities in the Danube River Basin***
16:30-16:45	**Dr. Nadežda Krstić,** University of Belgrade, Serbia: ***Rift in Belgrade***	**Dr. Anđelka Kovačević,** University of Belgrade, Serbia**:** ***Potential of Danubian Region: Scope from Astrophysics***
16:45-17:00	**SCHLUSSITZUNG / CLOSING SESSION**	
17:00-19:00	**BELGRAD – CITY TOUR / BELGRADE – CITY TOUR**	

POSTER SESSIONS

Donnerstag / Thursday, 13/6 - Freitag / Friday, 14/6/2013

Belgrader Universität, Rektorat Eingang / Belgrade University, Rectorate Hall

P01 **Agbaba J., Tubić A., Ivančev-Tumbas I., Molnar J., Watson M., Dalmacija B.**; University of Novi Sad Faculty of Sciences, Novi Sad, Serbia: ***PRESENCE OF ARSENIC IN THE GROUNDWATER OF VOJVODINA.***

P02 **Atanacković M., Cvejić J., Gojković-Bukarica Lj., Heinle H.**; Department of Pharmacy, Faculty of Medicine, Novi Sad, Serbia: ***ANALYSIS OF PHENOLIC CONTENT AND ANTIOXIDATIVE CAPACITY OF RED WINES FROM SERBIA***

P03 **Bučevac D.**; Vinča Institute of Nuclear Sciences, Belgrade, Serbia: ***RECYCLING OF WASTE MOLYBDENUM DISILICIDE HEATING ELEMENTS.***

P04 **Djikanović V., Cakić P., Nikolić V.**, Institute for Biological Research, Belgrade, Serbia: ***ACANTHOCEPHALAN PARASITES OF FISHES IN BELGRADE SECTION OF THE DANUBE RIVER, SERBIA***

P05 **Dragović G., Jevtović Đ., Smith C., Youle M., Owen A.**, University of Belgrade, School of Medicine, Institute for Clinical Pharmacology and Toxicology, Belgrade, Serbia: ***GENOTYPE FREQUENCIES OF PREGNANE X RECEPTOR (PXR 63396C→T) IN THE SERBIAN POPULATION.***

P06 **Ilieva Y., Yosifov D., Kaloyanov K., Kastreva E., Robev B., Zhelezova I., Konstantinov S.**; Faculty of Pharmacy, Medical University of Sofia, Bulgaria: ***ANTINEOPLASTIC ACTIVITY OF THE NATURAL COMPOUNDS CURCUMIN AND GERISAN.***

P07 **Matović B.**; Vinca Institute of Nuclear Sciences, Belgrade, Serbia: ***DENSIFICATION OF ADDITIVE FREE NANO β-SiC BY ULTRA-HIGH PRESSURE.***

P08 **Novaković R., Beleslin-Čokić B., Ilić B., Radunović N., Protić D., Heinle H., Šćepanović R., Gojković-Bukarica Lj.;** Institute of Pharmacology, Medical Faculty, Belgrade, Serbia: ***THE RELAXATION OF PREGNANT HUMAN MYOMETRIUM BY NATURAL POLYPHENOL RESVERATROL***

P09 **Protić D., Novaković R., Spremovic-Radjenovic S., Radunovic N., Heinle H., Gojkovic-Bukarica Lj.**; Institute of Clinical pharmacology and Pharmacology and toxicology, Faculty of Medicine, Belgrade, Serbia: ***THE EFFECT OF RESVERATROL ON THE HUMAN UMBILICAL VEIN.***

P10 **Stojanović I., Vujičić M., Nikolić I., Kontogianni V., Charisiadis P., G. Tzakos A., Stošić-Grujičić S.**; Institute for Biological Research „Sinisa Stankovic", Belgrade, Serbia: ***METHANOL EXTRACT OF ORIGANUM VULGARE AMELIORATES AUTOIMMUNE DIABETES IN MICE.***

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CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

0/9(048)

HUMBOLDT-KOLLEG (2013 ; Beograd)
Resources of Danubian Region : the possibility of cooperation and utilization : book of abstracts = Resourcen der Donau-region : măglichkeiten zur nutzung und zusammenarbeit / Humboldt-KOLLEG, Belgrade, June 12-15, 2013 ; editors Luka Č. Popović, Melita Vidaković. - Belgrade : Humbolt-Club Serbia, 2013 (Belgrade : Planeta print). - 108 str. ; 25 cm

Na spor. nasl. str.: Ресурси подунавског региона. - Tiraž 130. - Registar.

ISBN 978-86-916771-0-7

a) Наука - Апстракти
COBISS.SR-ID 198735372

ХУМБОЛТОВ КЛУБ СРБИЈЕ / HUMBOLDT-CLUB SERBIEN

http://www.humboldt-serbia.ac.rs/kolleg2013/index.html

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РЕСУРСИ ПОДУНАВСКОГ РЕГИОНА: МОГУЋНОСТИ САРАДЊЕ И КОРИШЋЕЊА

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RESOURCES OF DANUBIAN REGION: THE POSSIBILITY OF COOPERATION AND UTILIZATION

Београд / Belgrad / Belgrade, June 12-15, 2013

Supported by

Alexander von Humboldt Stiftung/Foundation

Under auspices

Serbian Academy of Sciences and Arts

University of Belgrade

Co-organizers

Institute for Biological Research "Siniša Stanković"

We thank for the support

Ministry of Education and Science of Republic of Serbia

Institute Jaroslav Černi

Botschaft der Bundesrepublik Deutschland Belgrad