

SLOVENIAN RESEARCH AGENCY

EXCELLENT IN SCIENCE

2015



SLOVENIAN RESEARCH AGENCY

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Excellence in Science is one of the projects of the Slovenian Research Agency. The purpose is to present the scientific achievements to the professional and general public and to promote links between social needs and the solutions that science can offer.

Individual Scientific Research Councils that operate within the framework of the Agency perform the selection of achievements within the Excellence in Science project. The achievements are presented in the form of open public events. In this way, we provide an insight into the operation and result of scientific research work in Slovenia, as well as promote the general enrichment of knowledge.



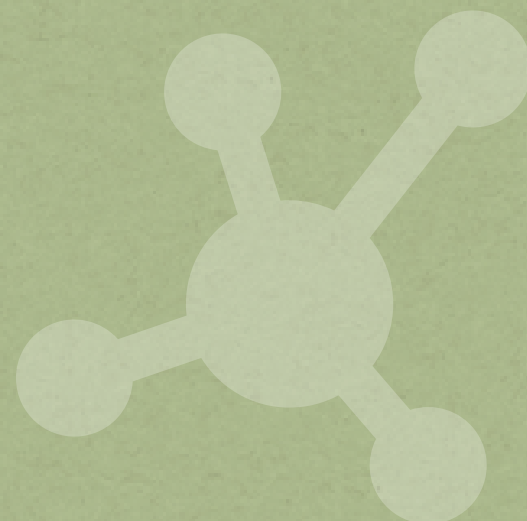
In 2015, the Agency joined the 10th Slovenian Innovation Forum and the Science on the Street popular lectures with Excellence in Science events. We were hosted by the Faculty of Arts, University of Ljubljana, and the Slovenian Museum of Natural History. The Videlectures.net portal supported all the events. The achievements are also gathered in this interactive publication.

The Slovenian Research Agency

PUBLIC SCIENTIFIC EVENTS



NATURAL SCIENCES



The impact of the environmental parameters on the microbial community dynamics

The impact of the environmental parameters on the microbial community dynamics was investigated in a semi-enclosed changing coastal marine ecosystem (Gulf of Trieste, northern Adriatic Sea, NE Mediterranean Sea). In our interdisciplinary study physical, chemical and biological parameters were determined with high temporal and vertical resolution over the two consecutive years. The statistical analysis of the time-series data was employed to attribute some of the changes observed in the microbial community to specific environmental conditions. Our results showed that despite the shallowness of this area, there was a significant difference between the surface and the bottom bacterial community structure. The bottom bacterial community was more diverse than the surface one and influenced by sediment re-suspension. The surface seawater temperature had a profound effect on bacterial productivity, while

the bacterial community structure was more affected by freshwater-borne nutrients and phytoplankton blooms. Phytoplankton blooms caused an increase of *Gammaproteobacteria* (*Alteromonadaceae*, SAR86 and *Vibrionaceae*) and shift in dominance from SAR11 to *Rhodobacteraceae* taxon at the surface. Our results propose the importance of the water mass movements as drivers of freshwater-borne nutrients and of allochthonous microbial taxa. This study emphasizes the prediction power based on association networks analyses that are fed with long-term measurements of microbial and environmental parameters. These interaction maps offer valuable insights into the response of marine ecosystem to climate- and anthropogenic driven stressors.



Source: TINTA, Tinkara, VOJVODA, Jana, MOZETIČ, Patricija, TALABER, Iva, VODOPIVEC, Martin, Malfatti, F., TURK, Valentina. Bacterial community shift is induced by dynamic environmental parameters in a changing coastal ecosystem (northern Adriatic, NE Mediterranean Sea) - a 2 year time series study. Environmental microbiology, ISSN 1462-2912. [Print ed.], 2014, <http://onlinelibrary.wiley.com/doi/10.1111/1462-2920.12519/abstract>, doi: 10.1111/1462-2920.12519

Landslides

at a uranium mill tailing deposit site Boršt (Slovenia)
detected by radar interferometry

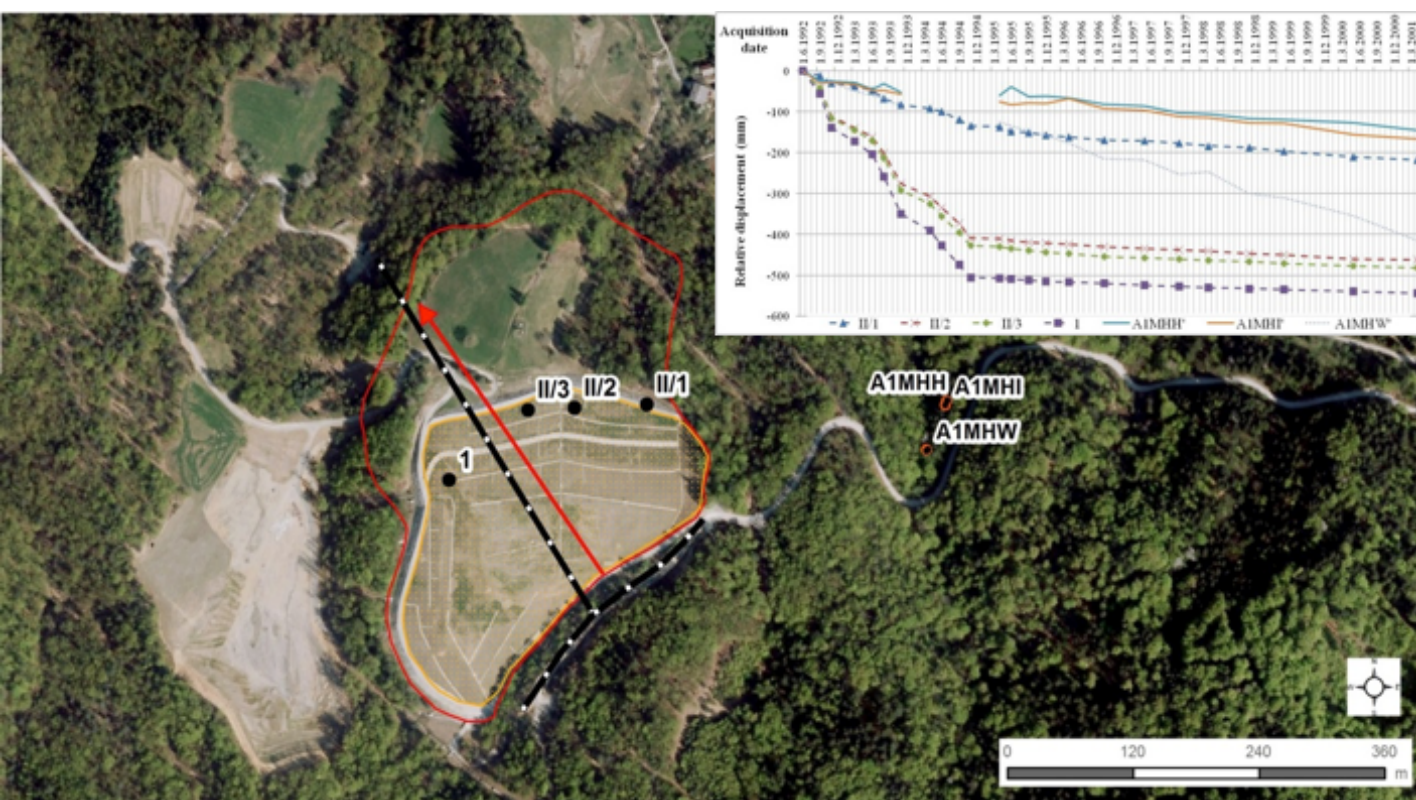
Monitoring slow slope mass movements is a major challenge for engineers and experts concerned with the issues of landslides occurrences. Owing to relatively slow movements a landslide spatial extent and their slope mechanisms is often specified with uncertainty. Detection of landslide area and their spatial spread in the area is often problematic as well as the assessment of future behaviour. Landslides can be monitored by conventional methods for displacement detection, but they can also be observed by the remote sensing techniques.

Paper presents a comparison of persistent scatterer interferometry (PSI) monitoring results with in situ displacement measurements at the Boršt uranium mill tailing deposit site (former uranium mine of Žirovski vrh) where landslide was triggered in November 1990 after heavy rain. Although the landslide did not directly endanger people, site remediation works were undertaken due to the subsequent environmental problems. Results have impact on ensuring the stability of the slope material and prevention of mobilization of en-

riched mill tailing deposit into the environment. Moreover results also contribute to understand dynamics and triggering mechanisms of landslides and their elaboration of hazard maps.



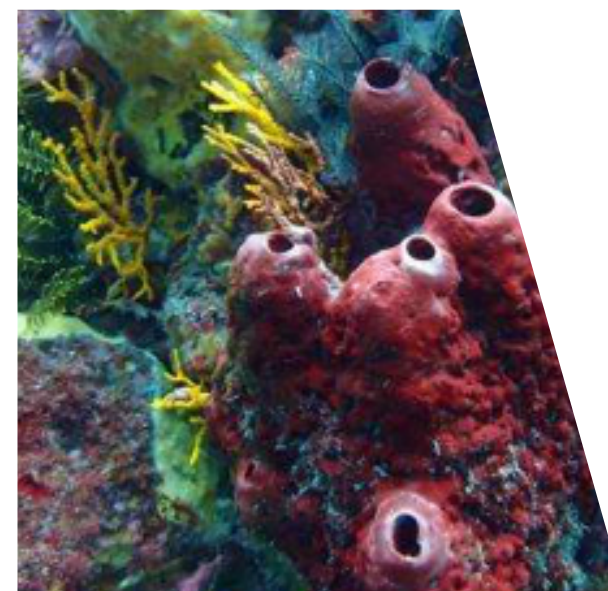
Source: ČARMAN, Magda, JEMEC AUFLIČ, Mateja, KOMAC, Marko. Landslides at a uranium mill tailing deposit site Boršt (Slovenia) detected by radar interferometry. *Landslides*, ISSN 1612-510X. [Print ed.], 2014, vol. 11, issue 3, str. 527-536, doi: 10.1007/s10346-013-0454-9



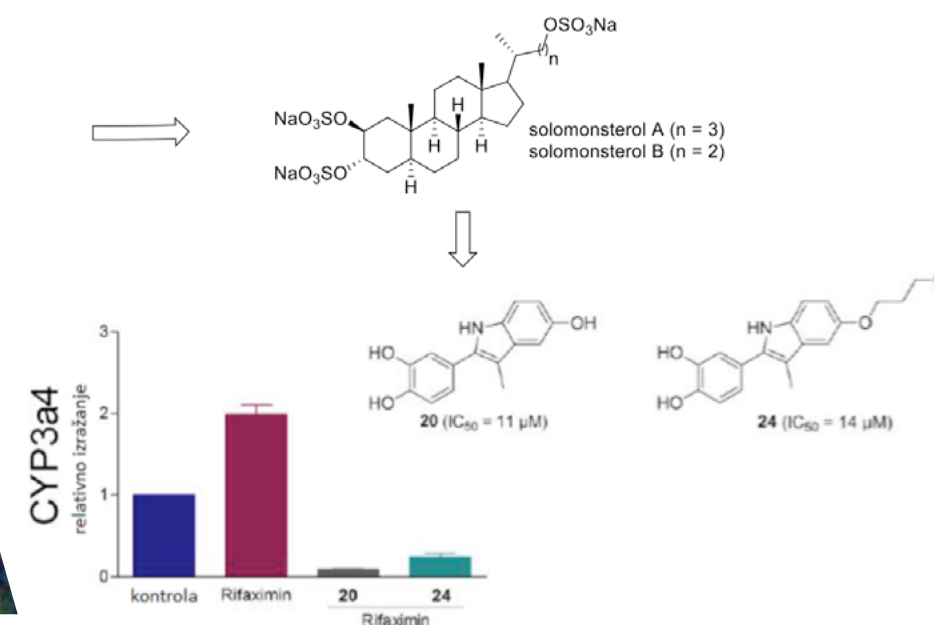
Legenda

● terenske točke ● PS točke → smer premikanja plazu ————— drenažni rov [yellow box] odlagališče jalovine Boršt [red box] aktivni plaz

Bazedoxifene-Scaffold-Based Mimetics of Solomonsterols A and B as Novel Pregnane X Receptor Antagonists



Pacific sponge *Theonella swinhoei*



Oceans and seas provide a reach source of bioactive natural compounds which in some special cases can be used as drugs or provide inspiration for preparation of structurally simpler drug molecules. Pregnane X receptor (PXR), a member of the NR1I nuclear receptor family, acts as a xenobiotic sensor and a paramount transcriptional regulator of drug-metabolizing enzymes and transporters. The over-expression of PXR in various cancer cells indicates the importance of PXR as a drug target for countering multidrug resistance in anticancer

treatments. In a paper published in the *Journal of Medicinal Chemistry* we described the discovery of novel bazedoxifene-scaffold-based PXR antagonists inspired by the marine sulfated steroids solomonsterol A and B as natural leads, performed as a part of the EU project MAREX. A luciferase reporter assay on a PXR-transfected HepG2 cell line identified compounds **20** and **24** as promising PXR antagonists. Further structure-activity relationship studies of the most active PXR antagonist from the series (compound **20**, $IC_{50} = 11 \mu M$) revealed

the importance of hydroxyl groups as hydrogen-bond donors for PXR antagonistic activity. PXR antagonists **20** and **24** ($IC_{50} = 14 \mu M$), in addition to the downregulation of PXR expression, exhibited inhibition of PXR-induced CYP3A4 expression, which illustrates their potential to suppress PXR-regulated phase-I drug metabolism.



Source: Ž. Hodnik, L. Peterlin Mašič, T. Tomašič, D. Smodiš, C. D'Amore, S. Fiorucci, D. Kikelj. Bazedoxifene scaffold based mimetics of solomonsterols A and B as novel pregnane X receptor antagonists. *J. Med. Chem.* 2014, 57, 4819-4833.

What can we learn about transformation of tin compounds in landfill leachates by the use of stable isotopic tracers?

Elemental tin (Sn) and its inorganic compounds are non-toxic, while some of Sn organic compounds (organotin compounds, OTCs) are highly toxic for living organisms. Sn has 10 stable isotopes, which means, that its atoms have different number of neutrons in the nucleus, and thus different masses. If Sn compounds are enriched on a mass of one or more Sn isotopes, and by applying appropriate analytical procedures, it is possible to use isotopically enriched Sn tracers to follow the transformation of Sn compounds in the environment. Isotopically enriched inorganic Sn species: $^{117}\text{SnCl}_2$ and $^{117}\text{SnCl}_4$ and organic butyltin compounds: $^{117}\text{Bu}_3\text{Sn}^+$

in $^{119}\text{Bu}_2\text{Sn}^{2+}$ were applied in the investigations of transformation of OTCs in landfill leachates. To discriminate the biotic and abiotic transformations of OTCs and inorganic Sn species, sterilization of leachate was also performed and data compared to non-sterilized samples. During the course of the experiment, the microbial degradation of Bu_3Sn^+ was clearly manifested in Sn-enriched spiked leachate samples, while abiotic pathway of degradation was observed for $\text{Bu}_2\text{Sn}^{2+}$. Biomethylation process was also observed in the leachate spiked with $^{117}\text{SnCl}_2$ and $^{117}\text{SnCl}_4$. Our experiments revealed that different microorganisms can transform

highly toxic butyltins into less toxic Sn compounds, but can also provoke methylation of non-toxic Sn species to highly toxic methyltin compounds. Before the release into the environment, landfill leachate needs to be purified. The managers of our municipal landfills take all necessary measures to prevent the release of OTCs and other toxic compounds to the nearby environment.



Source: K. Peeters, T. Zuliani, J. Ščančar, R. Milačič. The use of isotopically enriched tin tracers to follow the transformation of organotin compounds in landfill leachate. *Water Research*, 2014, 53, 297-309. [IF=5.323, ZR - water resources; 1/81, A*]

Organotin compounds are determined on different masses of tin atoms with gas chromatography coupled to inductively coupled plasma mass spectrometry technique. Dr. Kelly Peeters, Department of Environmental Sciences, Jožef Stefan Institute.

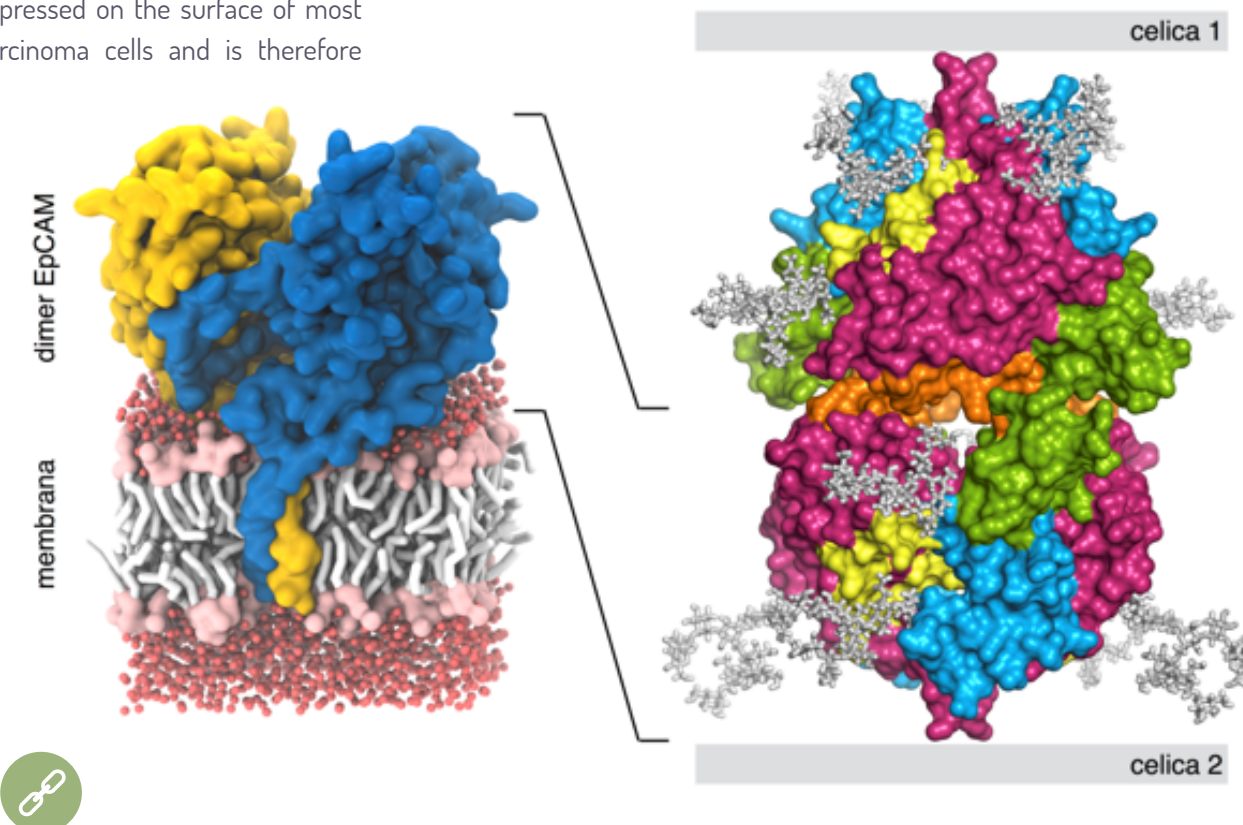


The surface of cells is covered by a variety of protein molecules which function as sensors and at the same time enable cells to interact with their surroundings. Researchers at the Chair of Biochemistry UL FKKT were the first to structurally characterize one of such molecules which is involved in both intercellular adhesion as well as cell signaling – the Epithelial Cell Adhesion Molecule (EpCAM). We have determined its structure, described the basic oligomeric unit (a complex of two molecules – dimer) and shed light on the formation of tetrameric intercellular EpCAM units, a mechanism critical for the molecule's function. Our results are also valuable from the medical aspect since EpCAM is strongly expressed on the surface of most carcinoma cells and is therefore

extremely useful both in diagnostics as a marker molecule as well as in targeted drug delivery. Our research is important in the light of enhancement and development of novel therapeutic approaches and at the same time offers an insight into complex processes on the cells' surface.

EpCAM, molecular lighthouse of cancer cells

Schematic representation of EpCAM dimer structure, embedded in a membrane (left), and a model of tetrameric adhesion unit with modeled oligosaccharide units placed in the intercellular space (right).



Source: Miha Pavšič, Gregor Gunčar, Kristina Djinović-Carugo, Brigita Lenarčič. Crystal structure and its bearing towards an understanding of key biological functions of EpCAM. *Nat. Commun.* 5 (2014), 4764, doi 10.1038/ncomms5764

Ultrafast Switching to a Stable Hidden Quantum State in an Electronic Crystal

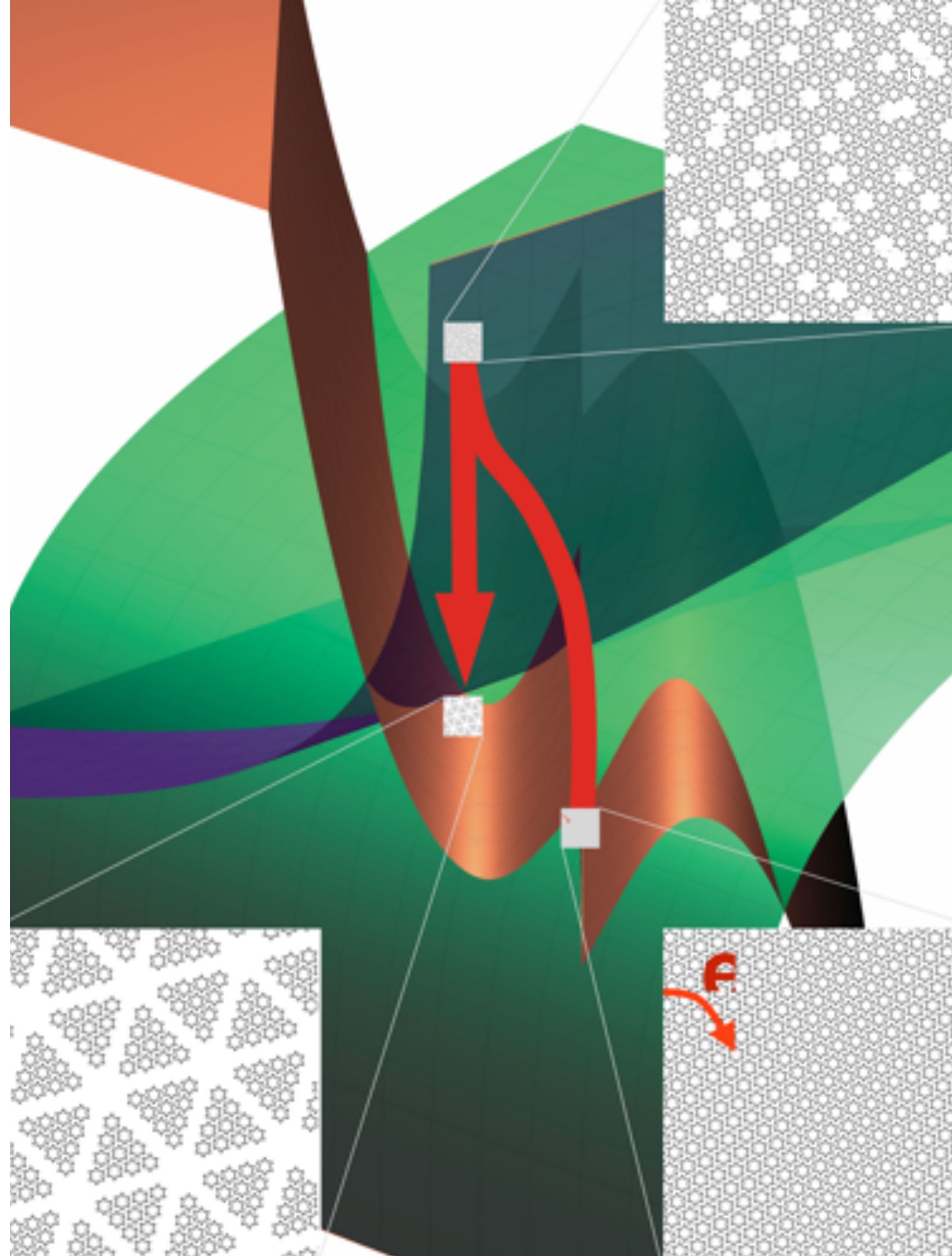
Shining intense laser light on a material can temporarily alter its properties. The effect usually subsides after a few picoseconds, unless the system is trapped in a metastable state, in which case the transient period may last as long as microseconds. In the article by **Stojchevska et al.** published in *Science*¹, observed that, following exposure to a 35-femtosecond laser pulse, the layered dichalcogenide 1T-TaS₂ entered a stable “hidden” state not present in the equilibrium phase diagram and stayed there indefinitely. The switch to the hidden state could be reversed by heat or a train of laser pulses. Because the

switch alters the sample’s conducting properties, the phenomenon might also lead to practical applications. The discovery is the first case of a stable hidden state, pointing to the possible presence of such states in other systems, such as the metastability of the universe and elementary particle collisions, and opening the way to understanding the mechanism for their formation. The research was supported by ARRS and ERC.

The discovery of ‘Hidden’ quantum state was published in *Science*¹ on 11 April 2014 by the researchers of Department of Complex Matter, Jožef Stefan Institute.



¹ Stojchevska, L. *et al.* Ultrafast switching to a stable hidden quantum state in an electronic crystal. *Science* 344, 177–180 (2014).

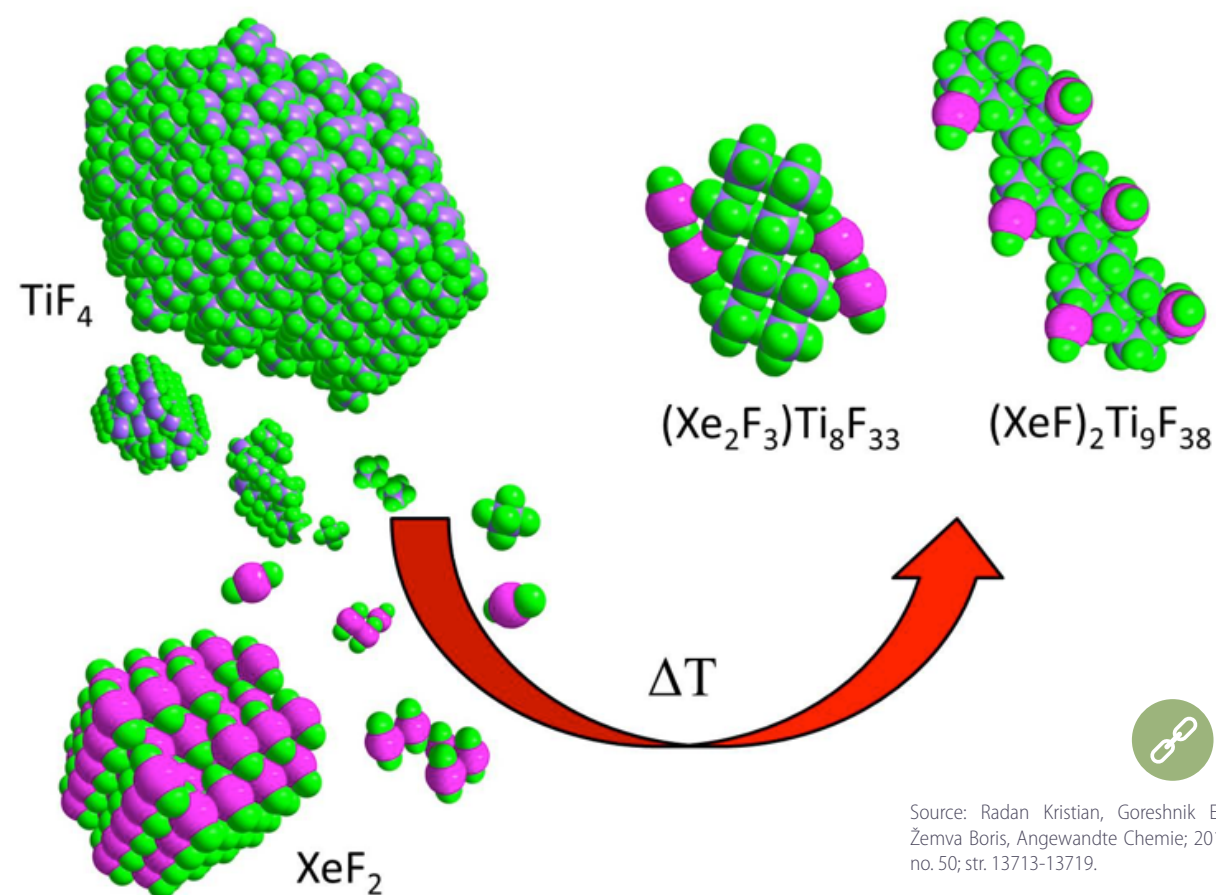


Xenon(II) Polyfluoridotitanates(IV)

More than half a century after the discovery of the first noble-gas compound, this unique chemistry field brings us new findings and discoveries essentially every year despite the small number of laboratories involved in this research area.

Probably the major contribution to the rich diversity of xenon chemistry comes from a linear molecule xenon (II) fluoride (XeF_2), which is able to give the cationic forms XeF^+ and Xe_2F_3^+ in the presence of strong fluoride ion acceptors. Within the study of the reactions between XeF_2 and titanium (IV) fluoride (TiF_4), we isolated a new type of Xe(II) salts with polymeric anions at higher temperatures: $[\text{XeF}]_2[\text{Ti}_9\text{F}_{38}]$ and $[\text{Xe}_2\text{F}_3][\text{Ti}_8\text{F}_{33}]$. Here,

both one- ($[\text{Ti}_9\text{F}_{38}]^{2-}$) and two-dimensional ($[\text{Ti}_8\text{F}_{33}]^-$) anions found in the structures of these products, exhibit a surprising ability to sustain relatively highly ionized forms of XeF_2 , which previously required the use of the strongest Lewis acids or fluoride ion acceptors. Moreover, by introducing a novel synthesis-crystallization approach, we opened some additional possibilities of making thermodynamically very stable Xe(II) salts with similar polyanions, which are derived from weaker Lewis acids.



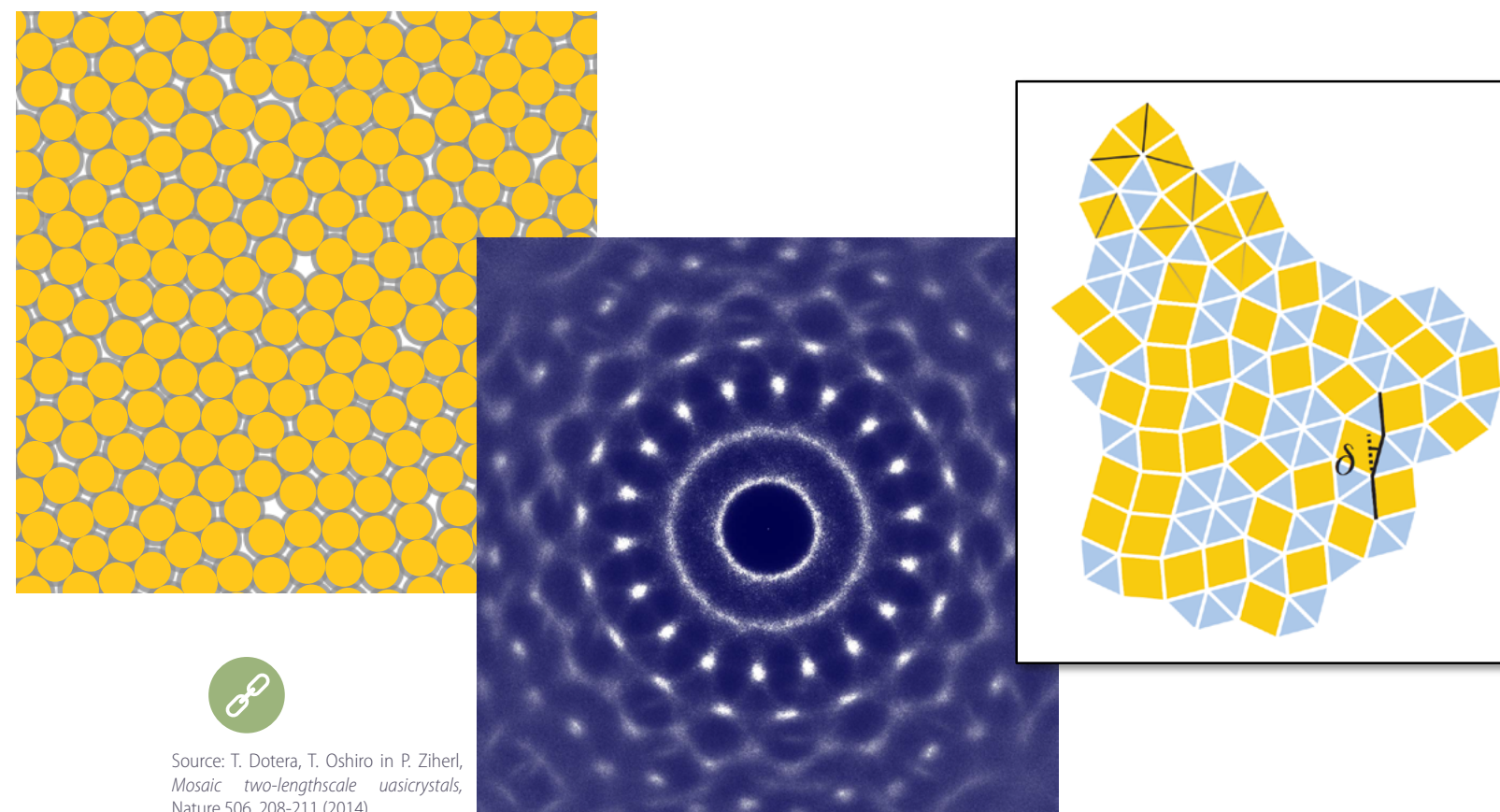
Source: Radan Kristian, Goreshnik Evgeny A., Zemva Boris, Angewandte Chemie; 2014; Vol. 53, no. 50; str. 13713-13719.

Mosaic quasicrystals

Quasicrystals are materials with a precise yet non-periodic positional order of the particles. If a crystal of 4-fold symmetry may be visualized by square ceramic tiles used in homes, quasicrystals may be likened to decorative patterns in islamic architecture which may be encoded by simple rules despite their complex structure. In a similar fashion, the main highlight of the present study is in showing that two known and four novel types of two-dimensional quasicrystals can be theoretically explained using

a rather simple force between the particles. By relying on computer simulations, we were able to demonstrate that model round particles with a hard core and a soft shoulder arrange such that the bonds between their centers lie along 10, 12, 18, and 24 directions in the plane, which corresponds to 10-, 12-, 18-, and 24-fold symmetry. The results of simulations were also interpreted in terms of a mathematical framework analogous to the well-known Penrose tiling.

18-fold quasicrystal (left), its diffraction pattern (center) and the rhombus-triangle tiling as the geometrical model of the quasicrystal (right).



Source: T. Dotera, T. Oshiro in P. Ziherl, Mosaic two-lengthscale quasicrystals, Nature 506, 208-211 (2014).

ENGINEERING SCIENCES

Nanolayer AlTiN-based hard coating with a blue color

In general, the intrinsic color of a solid materials results from the interaction of light with the free and bound electrons, while the structural color is created due to the interaction of light with physical nanostructures on the surface causing optical effects such as interference, refraction or diffraction. In the framework of this project we developed a bio-inspired nanolayer hard coating of blue color, which was modeled by imitating naturally occurring nanoscale morphology of nacre – (a nanolayered material of iridescence color with high fracture resistance and high hardness). We designed a new

color concept based on the absorption and interference effects in a semi-transparent thin film of AlTiN deposited over the TiN reflective layer (app. 100 nm thick). Colors of yellow, pink, violet to blue were prepared by varying the thickness of AlTiN in the range of 20–55 nm. By this approach we developed a AlTiN-based hard coating of highly saturated blue color. In addition to decorative layers we deposited AlTiN/TiN nanolayered hard coating which assured good tribological properties of the overall coating. Such decorative/protective coating design is suitable for the protection

of cutting tools used in machining of very hard and tough workpiece materials. The color of a coated tool is beneficial in manufacturing process since it indicates when the coating is worn out. For the design of decorative/protective coating we obtained Slovenian patent (patent no. 23538) and we got a golden award on the international biannual fair Forma Tool.



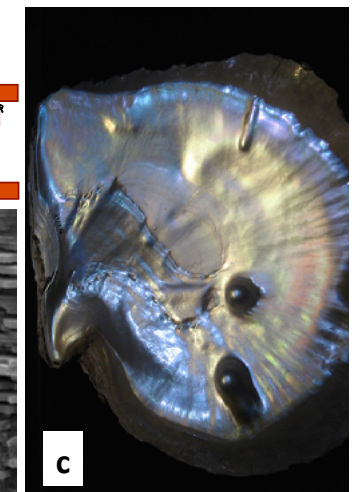
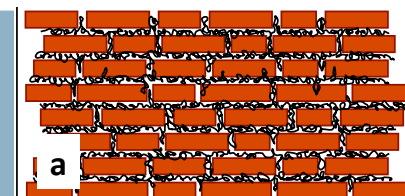
Source: M. Panjan, M. Klanjšček Gunde, P. Panjan, M. Čekada. Designing the color of AlTiN hard coating through interference effect. Surf. Coat. Technol., 2014, vol. 254, str. 65–72

We have implemented blue hard coating in industry and today, it is used in daily production in more than 20 companies in Slovenia.

Use the blue coating!



Schematic illustration (a) and SEM fracture cross section image (b, b and c image Credit: Fabian Heine-mann via Wikimedia Commons) of the structure of nacre (plates are CaCO_3 , glue is organic material); mother of pearl (c) and TEM cross sectional image of our blue nanolayer AlTiN/TiN hard coating.

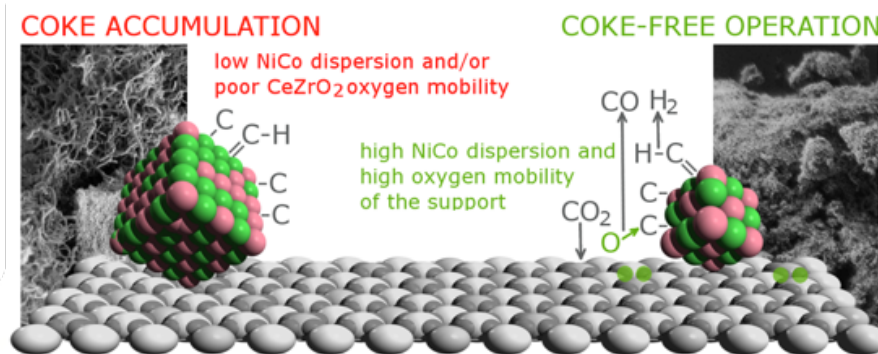
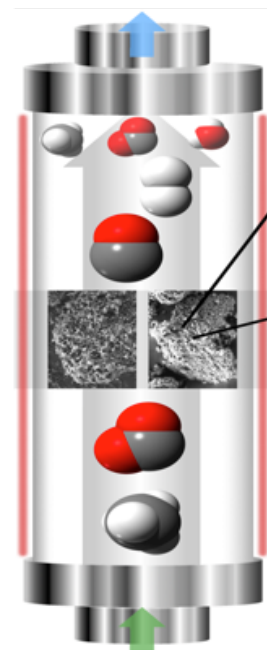


Novel transition-metal based catalyst for syngas production from methane and CO₂

Biogas is a mixture of methane and CO₂, which is formed during anaerobic microbial degradation of organic material. Current established processes for biogas utilization (co-generation, methane as a transportation fuel and gas network distribution) require removal

of CO₂ and other impurities prior to utilization. At the National Institute of Chemistry we have developed an advanced and economic heterogeneous catalyst based on transition metals, which is capable of transforming gaseous mixtures of CH₄ and CO₂ into syngas (H₂ and CO). The latter can be used for large-scale production of synthetic liquid fuels and other value added chemicals. The reforming process enables, besides solving the issue of biodegradable waste deposition, also the transition from fossil to renewable energy sources. The catalyst does not require CO₂ removal prior to reforming. The produced syngas has a 20–30 % higher calorific value compared to biogas.

More information on invention (pat. pend. EP14468002.2): www.skrcci.me/reforming



Source: I.G. Osojnik Črnivec, P. Djinović, A. Pintar, B. Erjavec, CATALYST and the process for converting gas mixtures of methane and carbon dioxide into syngas, EP 14468002.2, 2014-04-01, The Hague.

Optical fiber sensors having long active lengths, systems and methods

Optical fiber sensors with a long active lengths represent the solutions suitable for measuring strain, temperature or pressure. In addition to well-known advantages of the fiber optic sensors, the proposed sensor structure can be easily produced and provides opportunities for robust and cost efficient signal interrogation. The entire sensor production consists of few simple, sequential steps, including cleaving, selective etching of the sensor forming fiber for predetermined time, and splicing of the etched-fiber to the lead-in fiber. This leads to a formation of an air-filled Fabry-Perot interferometer

between the core of lead-in fiber and a core of the sensor forming fiber. Strain, temperature or pressure, influence the length of the air cavity, which can be detected with an appropriate signal interrogation system.

Sensor forming fiber was developed and produced in cooperation with company Optacore d.o.o..

Source: ĐONLAGIĆ, Denis, PEVEC, Simon, CIBULA, Edvard. *Optical fiber sensors having long active lengths, systems, and methods* : US 8,655,117 (B2), Feb. 18, 2014. [S. l.: s. n.], 2014. [25] f., ilustr. [COBISS. SI-ID 17639190]

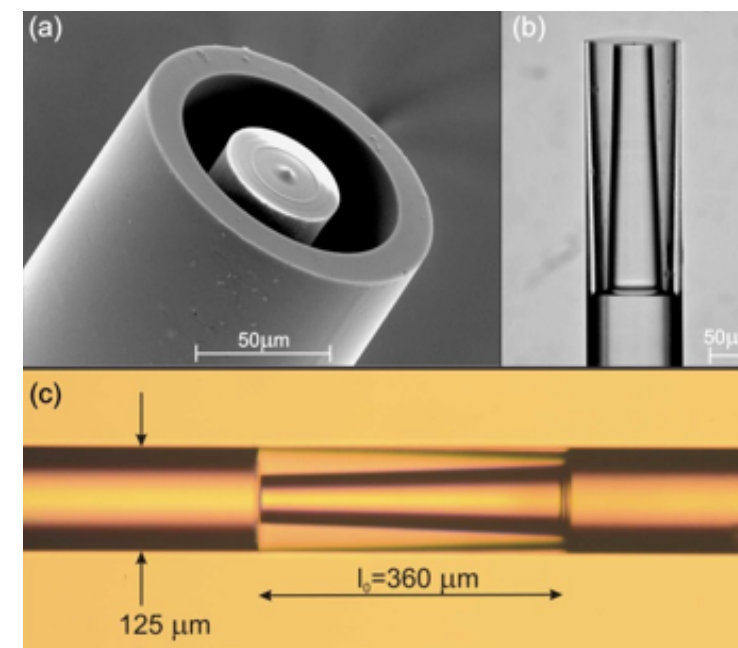
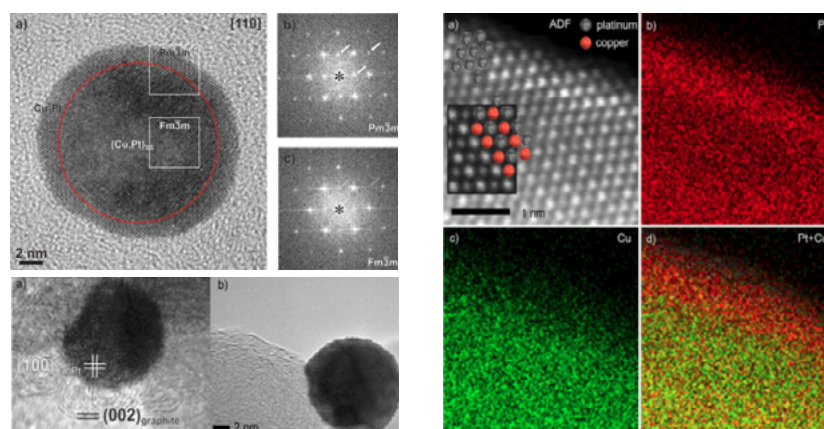


Figure: (a) etched structure-forming fiber taken with el. microscope, (b) etched structure-forming fiber taken with optical microscope, high-sensitive strain sensor with an active length of 360 mm.

New electrochemical catalyst for the oxygen reduction in fuel cells

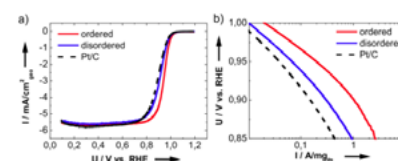
with proton exchange membrane based on alloy of copper and platinum

Fuel cells have theoretically the highest conversion efficiency of chemical energy of fuels into electrical current.



Fuel cells have theoretically the highest conversion efficiency of chemical energy of fuels into electrical current. They are a clean, environmentally friendly and sustainable technology – especially if we assume that the fuel (eg. hydrogen, methanol, ethanol) can be efficiently obtained from renewable sources (eg. solar or wind energy). The group of authors at the Institute of Chemistry has invented a new process for synthesis of electrocatalyst for the oxygen reduction and methanol oxidation reactions in fuel cells with proton exchange membrane (PEM). The catalyst is based on platinum and copper intermetallic alloy crystal

structure with a few atomic layers of thin platinum skin on the surface. The catalyst exhibits one order of magnitude higher activity than pure platinum due to the shift in the d-band centre of surface platinum electron structure. The advantage of the new preparation process is also enhanced stability of the catalyst (50,000 standard voltage cycles at room temperature). US patent (US Patent 9,147,885) has just been awarded. European and Japanese patents are in the evaluation processes. With this invention Slovenia is in the company of the developed countries that contributes to the development of core fuel cells technolo-



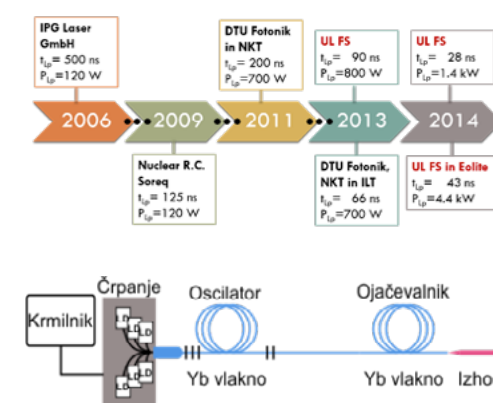
gies. The Institute of Chemistry and spin-out company Mebius d.o.o. are involved in commercialization of both the electrode catalyst and membrane-electrode assemblies. Authors have published several papers such as *Chemical Communications*.



Source: M. Bele, P. Jovanovič, A. Pavlišič, B. Jozinovič, M. Zorko, A. Rečnik, E. Tchernychova, S. Hočevar, N. Hodnik, M. Gaberšček, *Chemical communications*, vol. 50, str. 13124-13126 (2014).

Short pulsed gain-switched fiber laser

with improved efficiency utilizing unabsorbed pump recovery

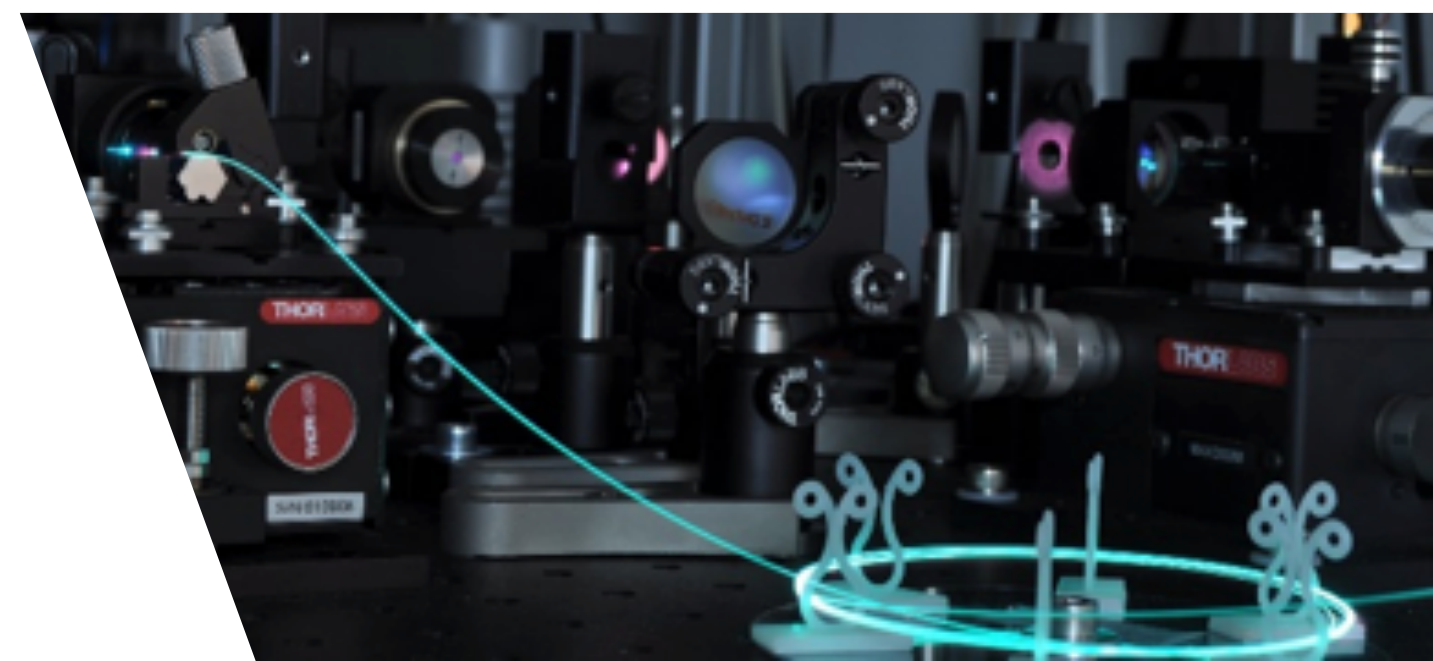


Fiber lasers represent an important alternative to conventional solid-state lasers for use both in industry and in medicine. Their main advantages are their compact size, high quality output beam, durability and robustness, high energy efficiency and the fact that they practically do not need maintenance. Within the framework of the project ARRS L-4174 in cooperation with Slovenian producers of laser systems (LPKF, Fotona and Optotek) an important step was made in the development of a specific type of ytterbium fiber

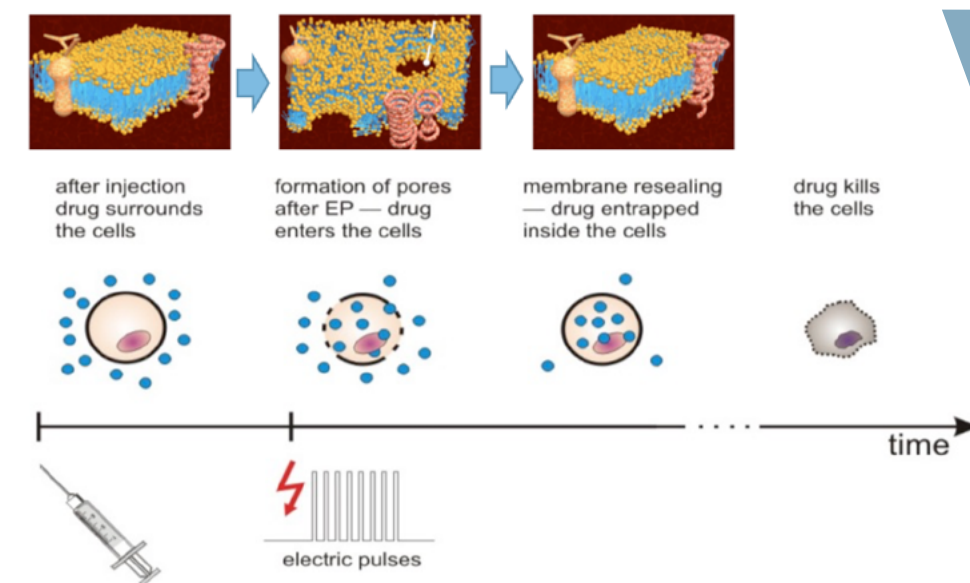
lasers based on gain switching. This concept represents a specific way to generate short laser pulses. Laser pulses were produced at 1030 nm wavelength with duration of 28-43 ns and peak power of over 4 kW, representing the best results achieved with this type of laser.



Vir: J. Petelin, V. Agrež, B. Podobnik, and R. Petkovšek, "Short pulsed gain-switched fiber laser with improved efficiency utilizing unabsorbed pump recovery," *Opt. Express* 22, 20588-20594 (2014).



Electrochemotherapy of colorectal liver metastases



The principle of electrochemotherapy

After the injection the cytostatic reaches the cells, but cannot penetrate through the cell membrane. When the electrical pulses open pores, cytostatic may penetrate into the cell. After a certain time the pores close and cytostatic remains in the cell, which leads to the death of the cell.

MEDICAL SCIENCES



Electrochemotherapy (ECT) is a new local treatment modality based on electroporation which facilitates drug and other substances diffusion into and out of the cells. During the electroporated state of the cell membrane, caused by strong electric pulses applied on the targeted tissue, the permeability of the cell membrane is significantly changed which facilitates cytotoxic drugs diffusion into the cells and therefore increases their cytotoxicity for more than 1000 times.

The aim of our prospective study conducted at the Institute of Oncology Ljubljana was to explore the

feasibility, safety and efficacy of bleomycin based electrochemotherapy on colorectal liver metastases.

The treatment of colorectal liver metastases was performed during open surgery. Electrodes were inserted under ultrasound guidance, following the treatment plan created at the Faculty of Electrical Engineering, University of Ljubljana. After i.v. bleomycin injection, the electric pulses were triggered.

Radiological and histological evaluation of 29 treated metastases showed that electrochemotherapy

is highly effective (85% complete responses) and safe treatment method for treatment of colorectal liver metastases without significant side effects, especially in the near vicinity of the major vessels where current thermal ablative procedures are not effective.



Source: Edhemovic I, Breclj E, Gasljevic G, Marolt Music M, Gorjup V, Mali B, Jarm T, Kos B, Pavliha D, Grcar Kuzmanov B, Cemazar M, Snoj M, Miklavcic D, Gadzijev EM, Sersa G. Intraoperative electrochemotherapy of colorectal liver metastases. J Surg Oncol. 2014 Sep;110(3):320-7.

Relationship of an economic crisis and suicidality in Europe and Slovenia

In 2008 a global economic crisis affected Europe. In our study we studied the possible impact of the economic crisis on suicide rates in European countries. Data were gathered from 29 European countries (Austria, Belgium, Estonia, Finland, France, Germany, Greece, Italy, Ireland, Netherlands, Portugal, Slovakia, Slovenia, Spain, Bulgaria, Croatia, Czech Republic, Denmark, Hungary, Latvia, Lithuania, Poland, Romania, Sweden, United Kingdom, Montenegro, Norway, Serbia, Switzerland). The main economic indices were unemployment, gross domestic product (GDP), national growth rate and inflation,

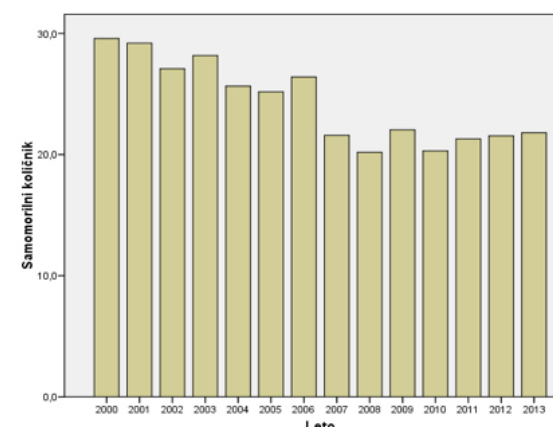
The following results were found:

There was a nadir for suicide rates across Europe around the year 2007 (in Slovenia the nadir was in 2008) and subsequent increase of suicide rates after that. This synchronisation cannot be considered

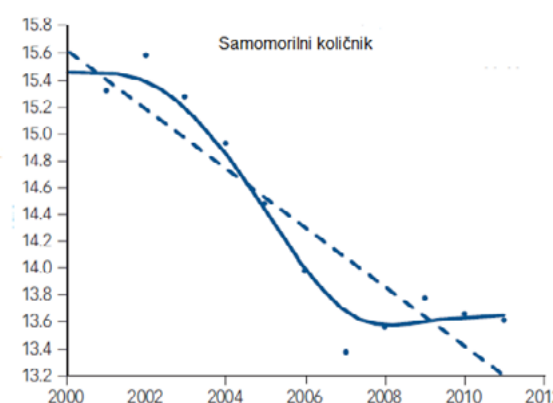
to be random; instead some common aetiology should have influenced the rates across the continent. Even in countries with more or less stable rates, the specific nadir was evident.

The nadir occurred more than a year before the onset of the economic crisis and the subsequent increase in suicide rates also occurred several months before the crisis. We concluded that the prodromal phase of the economic crisis influenced on suicidal behaviour of European inhabitants.

In Eurozone countries the correlation with GDP per capita was the dominant pattern. In the rest of EU countries the correlation with unemployment was also strong. In countries outside the EU, the correlation of suicide rates with economic variables (BDP, unemployment) was weak.



Movement of suicide rate in Slovenia, 2000 - 2012.



Movement of suicide rate in Europe, 2000 - 2012.



Source: Br J Psychiatry. 2014 Dec;205(6):486-96. doi: 10.1192/bjp.bp.114.147454. Epub 2014 Oct 30. Relationship of suicide rates to economic variables in Europe: 2000-2011. Fountoulakis KN1, Kawohl W1, Theodorakis PN1, Kerkhof AJ1, Navickas A1, Höschl C1, Lecic-Tosevski D1, Sorel E1, Rancans E1, Palova E1, Juckel G1, Isacson G1, Jagodic HK1, Botezat-Antonescu I1, Warnke I1, Rybakowski J1, Azorin JM1, Cookson J1, Waddington J1, Pregelj P1, Demyttenaere K1, Hranov LG1, Stevovic LI1, Pezawas L1, Adida M1, Figuera ML1, Pompili M1, Jakovljević M1, Vichi M1, Perugi G1, Andreassen O, Vukovic O1, Mavrogiorgou P1, Varnik P1, Bech P1, Dome P1, Winkler P1, Salokangas RK1, From T1, Danileviciute V1, Gonda X1, Rihmer Z1, Benhalima JF1, Grady A1, Leadholm AK1, Soendergaard S1, Nordt C1, Lopez-Ibor J1.

Is Autism hidden in our genes?

Pervasive developmental disorder, including autism and autism spectrum disorder (ASD) drastically interfere with the social interaction ability of an affected individual. Consequential social marginalization may heavily impair the quality of life. Nevertheless, the increase in awareness due to increasing numbers of affected individual influence the scientific research of the field. Although the simple question of what is causing the ASD is still unanswered, the great progress has been achieved in the last few years in understanding of the etiology of the disease.

Changes in genes involved in the development of brain are crucial component of ASD ethology followed by the environmental factors. Our research focused on the analysis of the elements that link genes and environment into complex interaction leading to the development of ASD. Results show that genetic changes in gene encoding superoxide dismutase 1, an enzyme involved in the cellular protection against oxidative stress, increase the risk of ASD development. Although the results were published in renowned scientific

journal - Autism Research there are still many questions waiting to be answered regarding the influence of the genetic change on the function of superoxide dismutase 1 and how it affects the brain development and the emergence of ASD.

Source: KOVAČ, Jernej, MACEDONI-LUKŠIČ, Marta, TREBUŠAK, PODKRAJŠEK, Katarina, KLANČAR, Gašper, BATTELINO, Tadej. Rare single nucleotide polymorphisms in the regulatory regions of the superoxide dismutase genes in autism spectrum disorder. *Autism research*, ISSN 1939-3806, 2014, vol. 7, iss. 1, str. 138-144.



The interaction of proteins involved in the pathology of autistic disorder.

Sudden out-of-hospital cardiac arrest and modern postresuscitation management

Sudden cardiac arrest remains the leading cause of death in developed countries with annual incidence ranging from 36 to 81 events per 100,000 inhabitants. Following initial cardiocerebral resuscitation on the field, reestablishment of spontaneous circulation (ROSC) is achieved in 40 to 60% of patients who are subsequently transported to emergency department. Because of typical delays in “chain of survival”, up to 80% of patients remain comatose despite ROSC which pinpoints to postresuscitation brain injury. We started to use mild induced hypothermia (32 and of 34 °C for 24 hours) to decrease the likelihood of unfavorable neurological outcome for the first time in September 2003 and since then it soon became a standard of care. Since we are primary PCI center for ST-elevation myocardial infarction (STEMI) with 24-hour service since year 2000, we gradually adopted a strategy of urgent coronary angiography and PCI also in survivors

of cardiac arrest. We were first to demonstrate that combining urgent invasive coronary strategy with hypothermia is feasible and safe. Importantly, survival with good neurological recovery concomitantly increased from 27% between 1995-2003 to 47% between 2004-2012.



The blockage of coronary artery



Source 1: BNOČ, Marko, FAJADET, J., LASSEN, JF, KALA, P, MACCARTHY, P, OLIVECRONA, GK, WINDECKER, S, SPAULDING, C. Invasive coronary treatment strategies for out-of-hospital cardiac arrest: a consensus statement from the European association for percutaneous cardiovascular interventions (EAPCI)/stent for life (SFL) groups. *EuroIntervention*, ISSN 1774-024X, 2014, vol. 10, no. 1, str. 31-37.



Source 2: TADEL, Špela, JAZBEC, Anja, NOČ, Marko. Impact of intensified postresuscitation treatment on outcome of comatose survivors of out-of-hospital cardiac arrest according to initial rhythm. *Resuscitation*, ISSN 0300-9572. [Print ed.], 2014, vol. 85, iss. 10, str. 1364-1369.

Innovative treatment of patients with polycystic ovary syndrome

Ovaries in polycystic ovary syndrome (PCOS) are genetically predisposed to produce excessive amount of androgens. Obesity is present in 50 to 80% of women with PCOS and further aggravates the consequences of androgen excess and metabolic disturbances of the syndrome. Phosphodiesterase enzymes (PDEs) have an important role in regulation of signaling pathways that modulate steroidogenesis of androgens in ovaries. It was also demonstrated that PDE4 inhibition caused oocyte maturation and induced ovulation in vitro and in animal models. The use of roflumilast, the first drug specifically inhibiting PDE4 is an established treatment of chronic inflammatory diseases, primarily chronic obstructive pulmonary disease. In addition, roflumilast has shown positive metabolic effects on glucose homeostasis and weight reduction in patients with type 2 diabetes. From conceptual point of view, we found several reasons to imply the pharmacological inhibition of PDE4 as a potential new multimodal target in PCOS. We conducted 12-week pilot randomized study demonstrating that roflumilast in combination with metformin significantly reduced body weight in obese PCOS when compared to metformin monotherapy, primarily due to a loss of fat mass. The improvements of obesity measures were associated with reduction of insulin resistance and decrease of androgens in patients treated with a combination of

metformin and roflumilast. The safety profile was acceptable. Our observations are not definitive but do encourage further exploration of the use of this class of medications in metabolic conditions associated with obesity.

Mojca Jensterle Sever, MD, PhD

Potential new pharmacological approaches in obese women with PCOS

The role of metformin in the management of polycystic ovary syndrome (PCOS) related obesity remains unsatisfactory. Following recent clinical practice guidelines metformin should be used in women with PCOS who are already undergoing lifestyle treatment and do not have improvement in impaired glucose tolerance or in those who have normal body weight but still have impaired glucose tolerance. Clearly, the novel treatment algorithm for PCOS related obesity should focus on the combination of drugs with distinct regulatory mechanisms of energy homeostasis. Thus, future strategies to treat obesity in this patient population will have to induce effective weight loss and will likely require the coadministration of medications that act through different mechanisms. Furthermore, novel treatment concepts may include changing metabolically high risk PCOS patients into metabolically more favourable obese individuals. Such a phenotype switch could be achieved by a reduction in visceral fat mass and normalization of diabe-

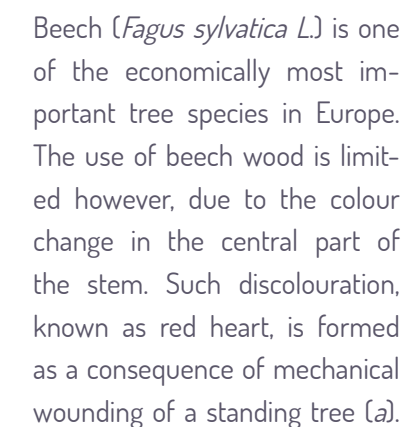
togenic profile. The additive efficacy of agents acting through GLP-1 mediated pathways in combination with a lifestyle intervention and metformin are attractive targets for further investigation. Less recognized distinct regulatory mechanisms related to the enhancement of GLP-1 mediated action through the inhibition of phosphodiesterase enzymes (PDE) 4 has recently become a reasonable focus of a potential new anti-obesity management. The use of roflumilast has shown positive metabolic effects on glucose homeostasis and weight reduction in PCOS. Furthermore, combined therapy of roflumilast and metformin significantly reduced body weight in obese PCOS when compared to metformin, primarily due to a loss of fat mass. The observed beneficial metabolic outcomes of selective PDE4 inhibition by roflumilast are based on the interplay between the PDE4 and the regulation of GLP-1.

Larger randomized studies of longer duration are needed to establish the metabolic and reproductive effects and the sustainability of weight reduction achieved by the discussed potential new treatment modalities in this population. The incretin effect of PDE 4 inhibitors also attracts considerable future attention. However, the potential additive efficacy of novel anti-obesity treatment options targeting incretin system in combination to metformin should be a focus of further investigation in PCOS population.

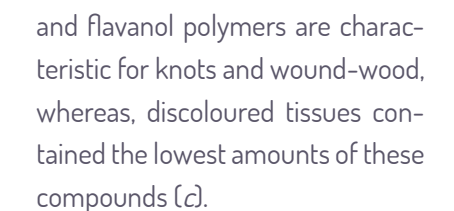
Professor Andrej Janež, MD, PhD



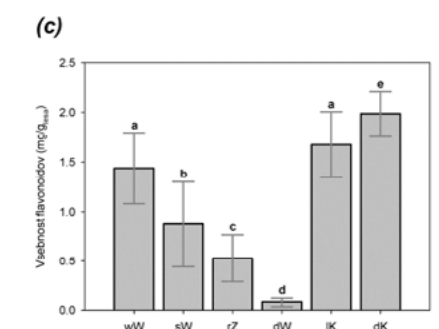
Source: JENSTERLE SEVER, Mojca, KOCJAN, Tomaž, JANEŽ, Andrej. Phosphodiesterase 4 inhibition as a potential new therapeutic target in obese women with polycystic ovary syndrome. *The Journal of clinical endocrinology & metabolism*, ISSN 0021-972X, 2014, vol. 99, iss. 8, str. E1476-E1481. <http://press.endocrine.org/doi/pdf/10.1210/jc.2014-1430>, doi: 10.1210/jc.2014-1430. [COBISS.SI-ID 1796780]



Wounded wood represents an important source of variability of extractives in a living tree. The results of this investigation represent an important contribution to the understanding of discoloration processes that occur in beech wood and reveal wood as a relevant source of compounds with high added value.



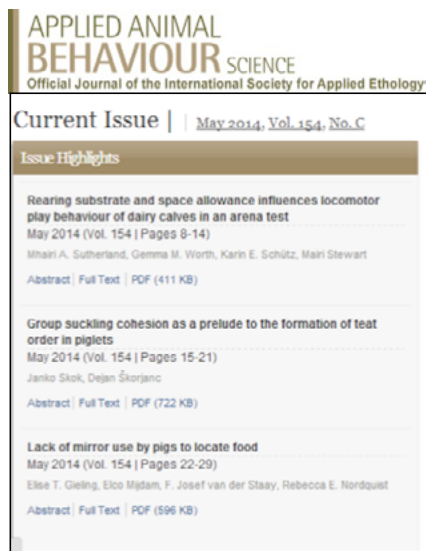
tained relatively low amounts of lipophilic extractives, among which free fatty acids and sterols were dominant. The content of fatty acids is largest in the knots and reaction zones, moreover, the latter contained larger amounts of free sterols as well. Beech wood contains significantly more hydrophilic extractives, mainly soluble sugars and phenolic substances, flavanol catechin being the dominant one (b). The largest amounts of phenols



Source: VEK, Viljem, OVEN, Primož, TERS, Thomas, POLJANŠEK, Ida, HINTERSTOISSER, Barbara. Extractives of mechanically wounded wood and knots in beech. *Holzforschung*. 2014, 68, 5: 529-539. [COBISS.SI-ID 2166153].

Group suckling cohesion:

a new paradigm of the primary socialization in piglets



This article presents the process of teat order formation in piglets (i.e. tendency to suckle at the same position). Teat order, which is normally established in a few days after birth, has been the only known form of the suckling order. However, our results showed that right after birth, thus, prior to the establishment of teat order, piglets rely on group suckling cohesion, an order mechanism that refers to the maintenance of significantly similar inter-individual distances on the udder. Similar collective cohesive behaviour of large animal groups, which increases survival rates of the group members, is a well-known phenomenon and is apparent in the moving of fish schools,

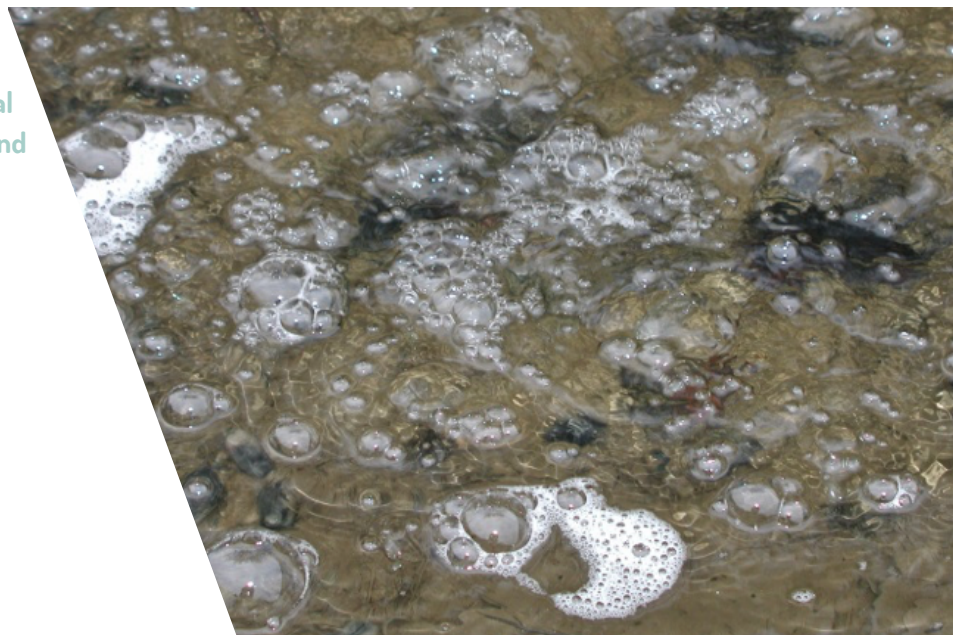
bird flocks or insect swarms. Our studies introduced a new paradigm of the primary socialisation in piglets and elucidate some important aspects of the suckling behaviour. The present study implies caution by the sows litters manipulation, e.g. cross-fostering, which may disturb the formation of social structure and increases the mortality of neonatal piglets.



Source: Skok J., Škorjanc D., Group suckling cohesion as a prelude to the formation of teat order in piglets. Appl. Anim. Behav. Sci., 2014, vol. 154, str. 15-21, doi: 10.1016/j.applanim.2014.02.003



Geogenic CO₂ exhalations at mofettes in Stavešinci (NE Slovenia) (top figure), and molecular analysis of soil microbial communities from control, medium, and high CO₂ exposed areas (figure below).



Mofettes

– Model Ecosystems for Research of Long-Term Abiotic Selective Pressures on Soil Microbial Communities

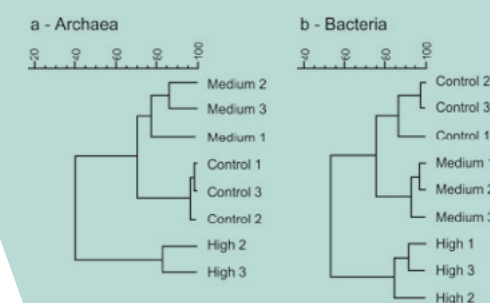
Biological processes in soil are an important component of all ecosystems. Soil biodiversity is largely uncharacterized, yet this uncharacterized diversity is responsible for key soil functions and ecosystem services, such as decomposition of organic matter, nutrient cycling, maintenance of soil structure and others.

The article in *Soil Biology & Biochemistry* describes the impacts of long-term exposure to high concentrations of geogenic CO₂ on diversity and community composition of soil microorganisms (archaea and bacteria) in mofette soils (natural CO₂ springs). A higher abundance of acidophilic and methanogenic taxa was consistently found in high CO₂ exposures. Questions on long-term (press) related changes in soil microbial communities are relevant to many

human drivers with the long-term nature, including climate change, nutrient input, land-use change and others. The results of our studies show that mofettes can be used as a good model ecosystem for research of long-term abiotic selective pressures on soil microbial communities.

Mofettes are relevant also as models for ecosystem responses to potential CO₂ leakage from underground Carbon Capture and Storage (CCS) systems, where they

could serve as a natural analogue for research of the ecological consequences in case of CO₂ leakage from the systems.



Source: N. ŠIBANČ, A. J. DUMBRELL, I. MANDIĆ-MULEC, I. MAČEK. Impacts of Naturally Elevated Soil CO₂ Concentrations on Communities of Soil Archaea and Bacteria. *Soil Biology & Biochemistry*, 2014, 68: 348-356.

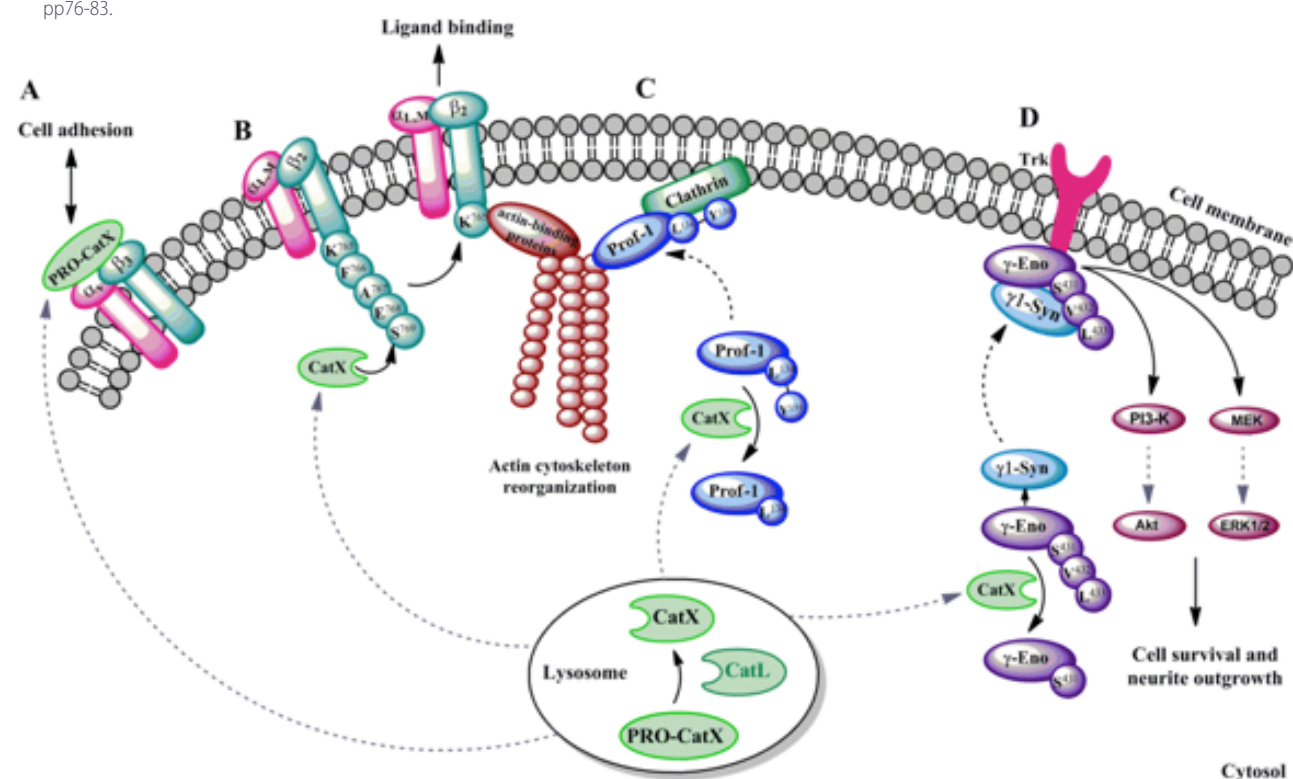
The role of cysteine carboxypeptidase cathepsin X in cancer

Cathepsin X has an important role in malignant progression increasing migration and invasiveness of tumor cells. Compared to related proteolytic enzymes it exhibits unusual properties.

It acts solely as carboxypeptidase and does not degrade extracellular matrix, however, it promotes progression of cancer by proteolytic degradation and regulation of various signaling molecules, such as integrin receptors, gamma enolase, chemokine CXCL-12, bradykinin, huntingtin in profilin-1. Partial degradation of the peptide chain at C terminus changes the structure and function of targeted molecules, in case of tumor cells this results in

changes in cell morphology and migration mode. The role of cathepsin X is very important in case that the excessive tumor-associated activity of other proteolytic enzymes is impaired. In this case the expression of cathepsin X increases enabling alternative pathways of migration and invasion of tumor cells. This finding may significantly improve the use of protease inhibitors in antitumor therapy as it could be more effective if impairing also cathepsin X activity.

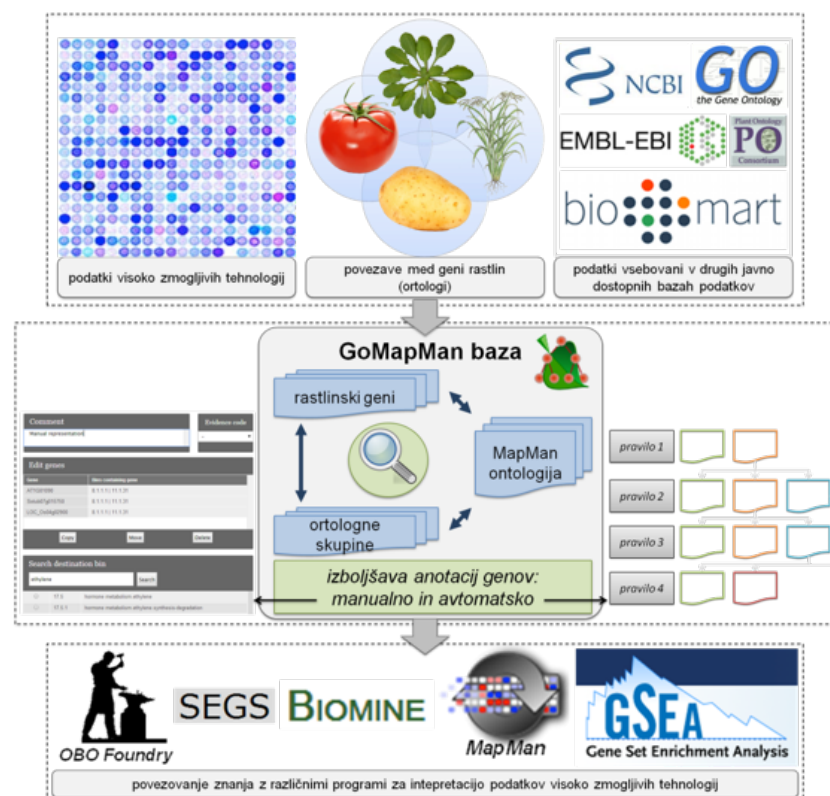
Source: KOS, J., VIŽIN, T., PEČAR FONOVIC, U., PIŠLAR, A. Intracellular signaling by cathepsin X: Molecular mechanisms and diagnostic and therapeutic opportunities in cancer. *Seminars in Cancer Biol.*, 2014, 31, pp76-83.



GoMapMan app

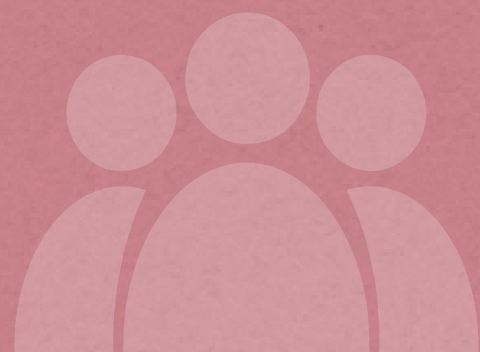
GoMapMan is an open web-accessible resource for gene functional annotations in the plant sciences. The core of GoMapMan consists of plant species genes (such as the model plant *Arabidopsis thaliana* and some agronomically important crops), which are described with the MapMan ontology gene function concepts. The inclusion of orthologue information allows for simultaneous visualisation of these gene annotations across several plant species, which in turn facilitates the time intensive manual curation of these descriptions for the end user. Additionally, automatic consolidation of gene annotations for different plant species through use of this orthologue group information is implemented. Integration of external knowledge about genes from publicly available resources and the provided exports for high-throughput data analysis tools advance our understanding of how plants globally respond to various external stimuli, e.g. drought or plant pathogen infection.

Source: RAMŠAK, Živa, BAEBLER, Špela, ROTTER, Ana, KORBAR, Matej, MOZETIČ, Igor, USADEL, Björn, GRUDEN, Kristina. GoMapMan : integration, consolidation and visualization of plant gene annotations within the MapMan ontology. *Nucleic acids research*, ISSN 0305-1048, 2014, vol. 42, iss. D1, str. D1167-D1175. <http://nar.oxfordjournals.org/content/42/D1/D1167.full.pdf+html>, doi:10.1093/nar/gkt1056. [COBISS.SI-ID 2966607]



www.gomapman.org

SOCIAL SCIENCES



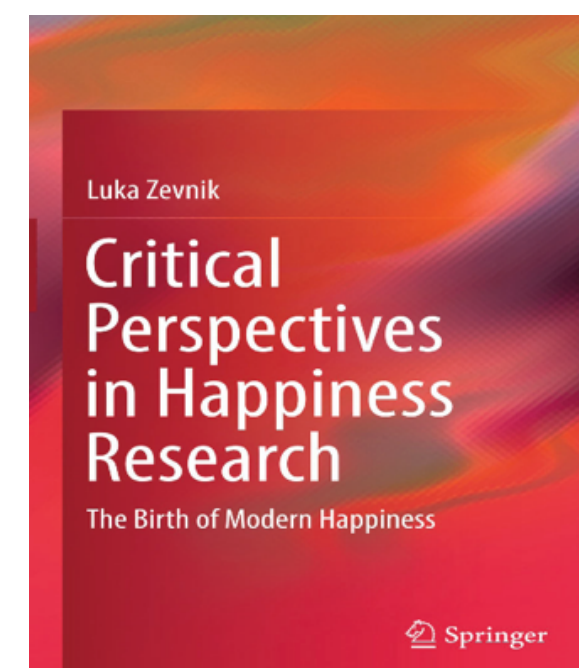
Critical Perspectives in Happiness Research: The Birth of Modern Happiness

Critical Perspectives in Happiness Research: The Birth of Modern Happiness is a scientific monograph published by Springer. It offers a provocative interdisciplinary exploration of the origins of happiness in the Western culture that challenges the widespread understanding of happiness as an intrinsically positive timeless universal experience. Luka Zevnik draws on the various disciplines of cultural studies, sociology, anthropology, philosophy, history and cultural neuroscience to present a novel critical approach for the study of happiness. With the help of recent empirical evidence and theoretical reflection happiness is portrayed as a historically and culturally located notion and experience characteristic only to the Western world. In the central section of the book Zevnik expands upon this argument through an interdisciplinary analysis of the social, religious, ethical and political processes that lead to the emergence of happiness. The 17th and the 18th

centuries are depicted as the decisive period in which, after hundreds of years of Christian emphasis on the afterlife and salvation, Western culture started to embrace worldly happiness as the primary ideal of human existence, which in turn guided the story of modernization. Since the birth of happiness established the basic structure also for all later forms of happiness in Western culture, the illumination of this pro-

cess represents a valuable point of departure for any further inquiries into manifestations of happiness in our culture.

Source: ZEVNIK, Luka. Critical perspectives in happiness research : the birth of modern happiness. Cham [etc.]: Springer, cop. 2014. XIV, 158 str. ISBN 978-3-319-04402-6. ISBN 3-319-04402-8. ISBN 978-3-319-04403-3, doi: 10.1007/978-3-319-04403-3. [COBISS.SI-ID 32923741] kategorija: 2A (Z, A*, A*, A1/2).



Is low fertility really a problem?

Population aging, dependency, and consumption

Which level of fertility in the long run provides the highest standard of living defined as per capita consumption? From public finances point of view a high fertility of 3.3 births per woman would be the most favourable in Slovenia because having a comprehensive systems of support for the elderly. However, since also private transfers from parents to children need to be financed, the optimal level reduces to 2.2. Finally, taking into ac-

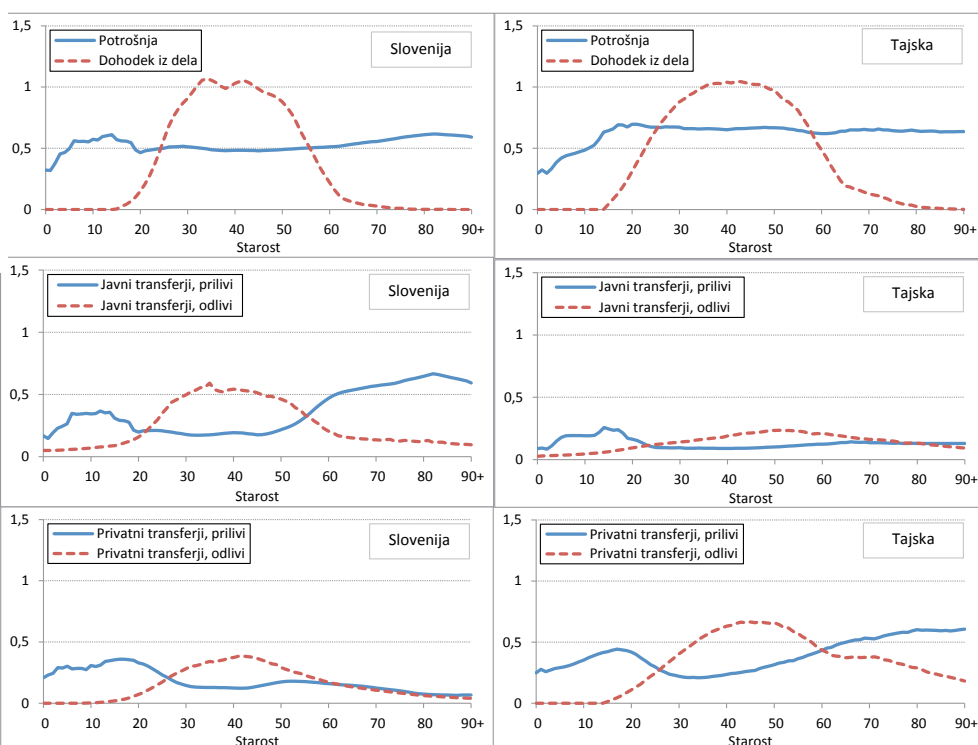
count also the cost of capital for a growing labour force (which lowers the consumption) the optimal fertility in Slovenia would be around 1.8 births per woman.

The results for other 39 countries depend on the patterns of consumption, labour income and transfers (public and private) across age groups in each country. Also in most other countries the optimal fertility is somewhat below

the replacement level of 2.1 births per woman. However, a very low fertility between 1.2 and 1.6 births per woman that Slovenia is facing in the last 25 years is so low that it has negative impact on the standard of living.



Consumption, labour income, public transfers and private transfers by age; Slovenia (2004) on the left and Thailand (2004) on the right



Note: The age profiles are expressed according to the average income from work at the age of 30-49.
(Source: International project »National Transfer Accounts«.)

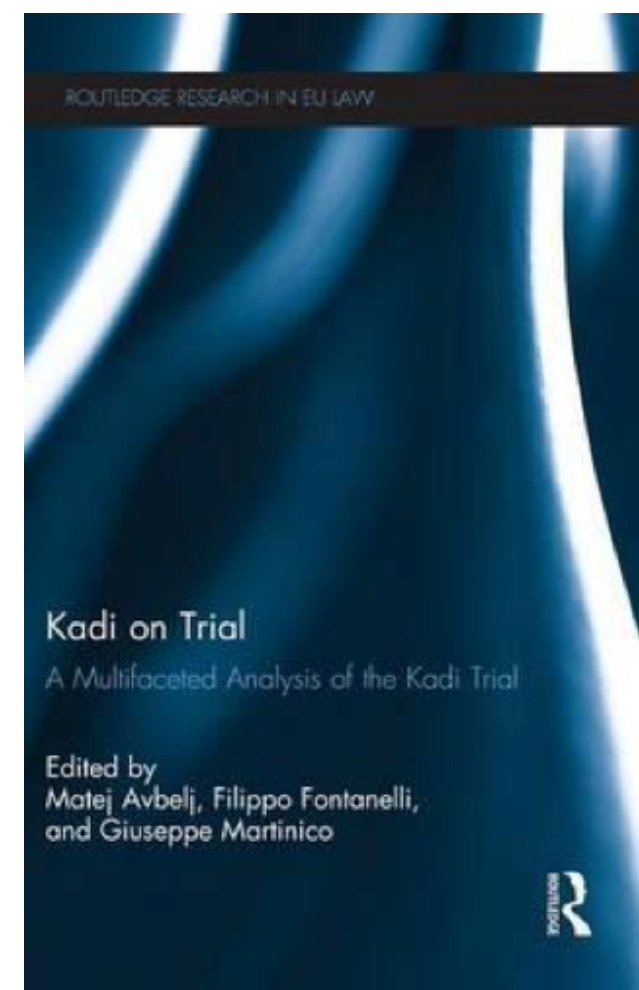
Source: LEE, Ronald, MASON, Andrew, SAMBT, Jože, et al. Is low fertility really a problem? : population aging, dependency, and consumption. *Science*, ISSN 1095-9203, 10. Oct. 2014, vol. 346, iss. 6206, str. 229-234. <http://www.sciencemag.org/content/346/6206/229.full.pdf>, <http://www.sciencemag.org/content/suppl/2014/10/08/346.6206.229.DC1/Lee.SM.pdf>, doi: 10.1126/science.1250542. [COBISS.SI-ID 22246886]

Post-modern challenges of transnational law for the European Union

The project on the Post-modern challenges of transnational law for the European Union was dedicated to an in-depth study of paradigmatic shifts in the field of law caused by transnational actors. The emergence of transnational has initiated a transition from the modern to a post-modern concept of law. This is demonstrated on the case of Mr. Kadi in a scientific monograph co-edited by Matej Avbelj. The contribution first elucidates the very concept of modern law, which has been reduced to a dichotomy between legal positivism and non-positivism. It is argued that this dichotomy has to be overcome to conceive and to preserve the modern concept of law as an integral concept. Various theoretical approaches could be employed to meet that objective, but the contribution endorses legal pluralism as the best theoretical choice.

Source 1: AVBELJ, Matej (urednik), FONTANELLI, Filippo (urednik), MARTINICO, Giuseppe (urednik). Kadi on trial : a multifaceted analysis of the Kadi trial, (Routledge research in EU law). London; New York: Routledge, 2014. XII, 222 str. ISBN 978-0-415-64031-2. [COBISS.SI-ID 78761217]

Source 2: AVBELJ, Matej. The case of Mr. Kadi and the modern concept of law. V: AVBELJ, Matej (ur.), FONTANELLI, Filippo (ur.), MARTINICO, Giuseppe (ur.). Kadi on trial : a multifaceted analysis of the Kadi trial, (Routledge research in EU law). London; New York: Routledge, 2014, str. 49-63. [COBISS.SI-ID 78764033]



Parliamentarisation in a Post-Conflict Context: The Kosovo Assembly Support Initiative

Based on extensive empirical research, we focus on the parliamentarisation in Kosovo in the context of a multi-stakeholder partnership (MSP). We investigate the creation, operation, and effects of co-operation within an MSP called the Kosovo Assembly Support Initiative (ASI), which included close co-operation of the Slovenian National Assembly. The article declines a hypothesis that participation of foreign parliaments with a long parliamentary tradition is demanded in a process of parliamentarization of a post-conflict society. It rather shows the importance of other factors, such as trust among partners, similar parliamentary experience, understanding needs in a newly-forming parliament, commu-

nication skills among partners and parliamentarians, consistency of expectations and approaches to parliamentarization. For Slovenia, the results of this research are especially relevant as they show almost unused capabilities of Slovenian actors for playing an active role in post-conflict reconstruction in the Western Balkans.

Source: ROTER, Petra, BOJINOVIĆ FENKO, Ana. *Parliamentarisation in a post-conflict context : the Kosovo Assembly Support Initiative*. Parliamentary waffairs, ISSN 0031-2290, 2014, 19, str. <http://pa.oxfordjournals.org/content/early/2014/11/11/pa.gsu025> doi: 10.1093/pa/gsu025. [COBISS.SI-ID 33025629]



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Parliamentarisation in a Post-Conflict Context: The Kosovo Assembly Support Initiative

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Development and construct validation of the Individuation Test for Emerging Adults (ITEA)

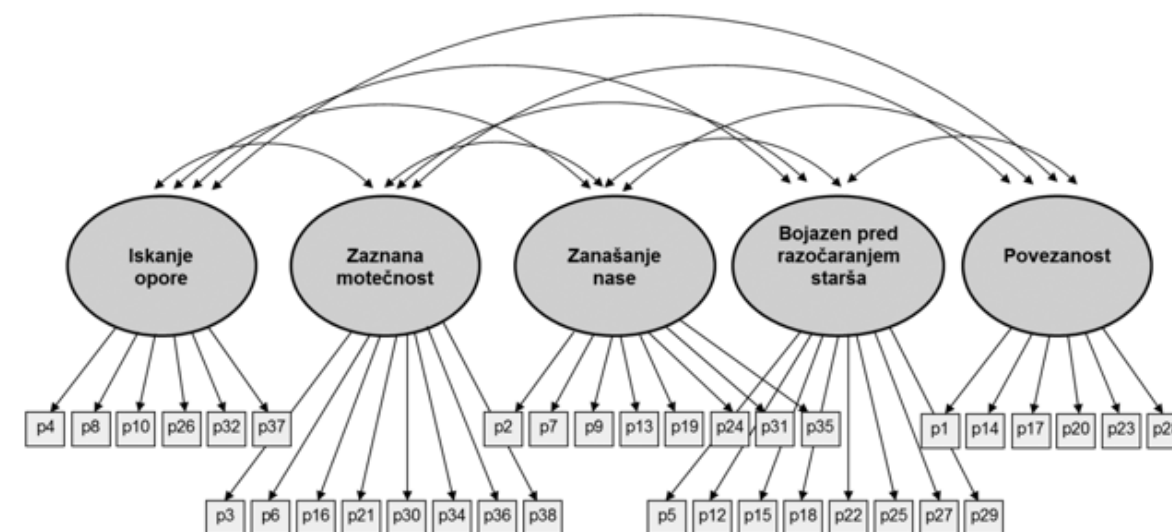
We conducted in-depth interviews with emerging adults, constructed a pilot version of the test and applied it on a demographically heterogeneous sample (Study 1). After several psychometric and content-related analyses we appropriately altered the test and applied it on another independent sample (Study 2). The test has equal forms in relation to mother and father, and the final 5-factor structure (Support Seeking, Connectedness, Intrusiveness, Self-Reliance, and Fear of Disappointing the

Parent) is stable (invariant) across male and female emerging adults. The measurement invariance allows us to make valid comparisons between the mean scale-scores of different groups of participants. The content-related and statistical analyses showed that the ITEA scales have good reliability, construct and criterion validity.

Vir: KOMIDAR, Luka, ZUPANČIČ, Maja, SOČAN, Gregor, PUKLEK LEVPUŠČEK, Melita. Development and construct validation of the Individuation Test for Emerging Adults (ITEA)., *Journal of Personality Assessment*, 2014, 96(5).



Based on the theory of emerging adulthood and contemporary models of individuation, we developed the first instrument (ITEA) for assessing developmentally specific aspects of individuation in relation to mother and father in emerging adulthood.



Faktorska struktura testa TOPO (Test osamosvajanja na prehodu v odraslost).

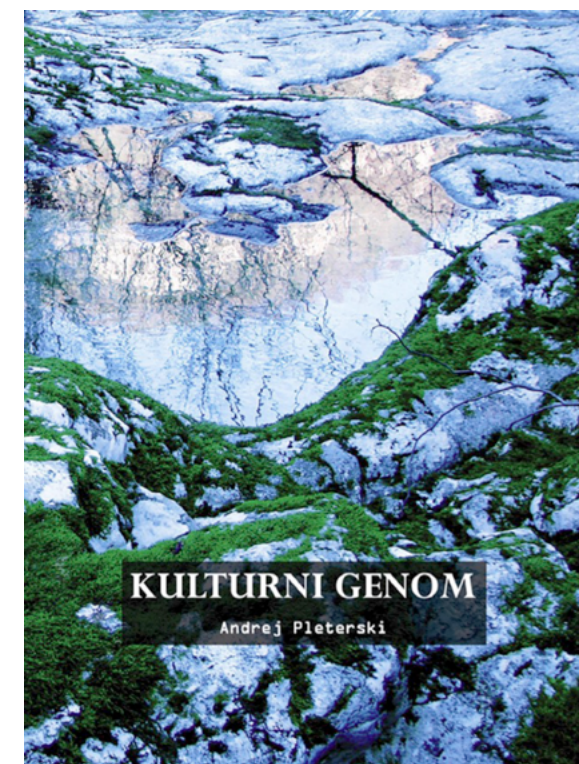
HUMANITIES

The cultural genome. Space and its ideograms of the mythical story

As a biological genome determines our biological appearance, so too the cultural genome determines our cultural expression. This is a set of findings about the functioning of the universe and rules derived from them. When people verbalize these findings in a narrative, a mythical story occurs. A mythical landscape is a form of the cultural landscape that people created in accordance with their mythical conceptions that they could master the forces of nature with its help.

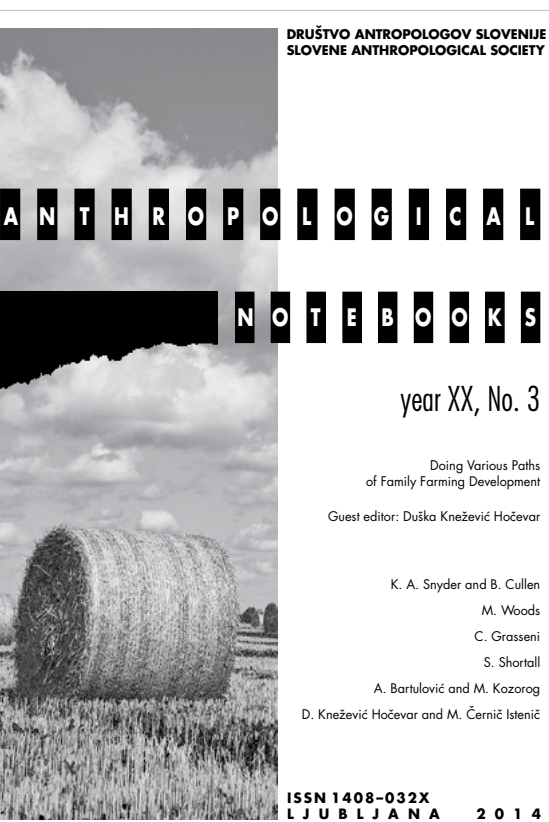
From individual structures of the text fragments of Slavic folk traditions, a composite story in many versions is made, which explains the mechanism of renewal and describes the cyclical changes of the nature. People were using this mythical story as a mental model, which was materialized in specific spaces as spatial ideograms. In conclusion, the acquired findings are compared with the early medieval idol of Zbruč in Ukraine and a complete structural matching is established. The Zbruč idol shows a spatial arrangement of three realms of the universe, control mechanisms of these realms, a sequence of natural and life changes.

Source: PLETESKI, Andrej. *Kulturni genom: prostor in njegovi ideogrami mitične zgodbe*, Vir: (Zbirka Studia mythologica Slavica, Supplementa, suppl. 10). Ljubljana: Založba ZRC, 2014. 408 str., ilustr., zvd. ISBN 978-961-254-736-3. [COBISS.SI-ID 276157952]



Excavations on Krvavec, 2004

Doing Various Paths of Family Farming Development



Fieldwork

Following envisioned activities in the context of the International Year of Family Farming 2014, the guest editor of the Anthropological Notebooks invited recognised foreign and domestic scholars to join in common effort to critically reflect upon actual circumstances and practices of family farming worldwide. The articles of this special issue entitled 'Doing Various Paths of Family Farming Development' draw on the authors' long-term fieldwork. Their studies critically discuss ignored local contexts of programmes of 'sustainable intensification' interventions in African smallholder farming (cases from Ethiopia, Tanzania and Ghana), contrasting responses (from adaptation to resistance) of family farmers from Australia, New Zealand and the UK to the pressures of globalization, the emerging collaboration between alternative provisioning networks in Italy and smallholders, changed gender and working identities in family farms' couples in Northern Ireland, the

complex motivations of Slovenian family farmers to take up organic farming, and a critical reflection on the agricultural knowledge transfer system in Slovenia.

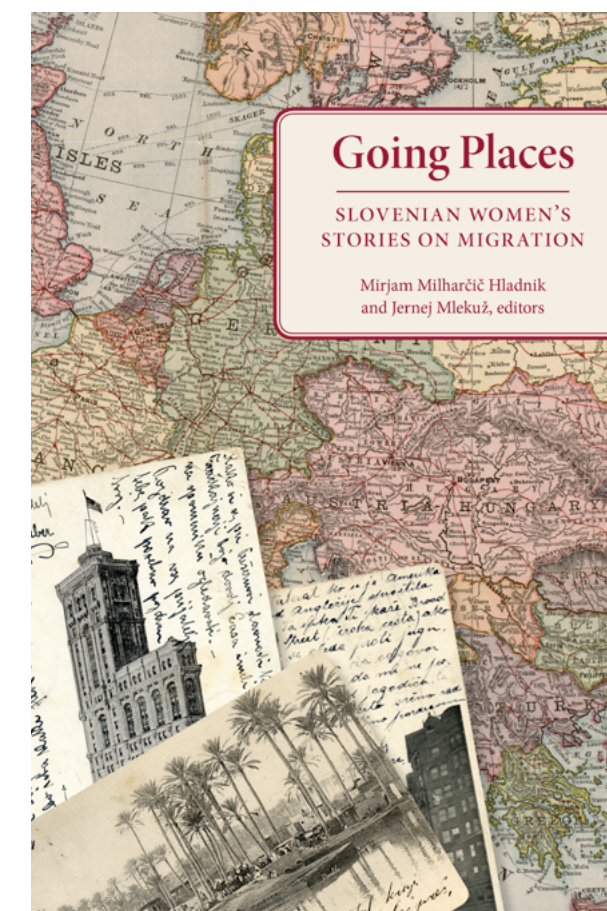


Source: Duška Knežević Hočvar: Anthropological notebooks, year XX, No.3: Doing Various Paths of Family Farming Development. Knežević Hočvar, Duška (guest editor 2014)

Going Places: Slovenian Women's Stories on Migration

With its engaging contributions from six authors this book marks an important step towards a better understanding of the migration dynamics of the past and of the present, of Slovenia and Europe and of the world. Women migrants and their personal experiences have been in the focus of academic research only for the past two decades. In regard to various social, economic and historical circumstances, the life stories of migrant women present how lives depend on cultural landscapes, personal attitudes, intimate calculations and independent decisions. They show how the decisions in the migration processes were influenced by not only economic and political factors, moreover by family bonds and friendship networks as well as by intimate reasons and aspirations. Personal accounts of migrants along with the subjective experiences of those who left and those

who stayed help us to re-construct migration phenomena as well as reveal the complex processes of personal identity construction. The interdisciplinary use of such auto/biographical sources enriches migration studies with new insights into the roles, experiences, statuses and dealings of both men and women in migration contexts.



Source: Milharčič Hladnik, Mirjam, Mlekuž, Jernej: Going Places. Slovenian Women's stories on Migration, Akron University Press, 2014. COBISS. SI-ID 36753453

Constructivism and Kosovel

This monograph on Kosovel discusses one of the most difficult problems. It explains the number of non-interpreted elements in Kosovel's *Diaries*, poems and correspondence that literary studies have set aside and solves one of the most complex misunderstandings in Slovenian literary history. It then successfully uses this knowledge in order to understand the Kosovel cons, which are now, 85 years after their creation, finally being properly read and evaluated as Kosovel has become an important name in European literary constructivism. The poet decided to use this movement since he could synthesise a *mechanical technique* and *organic nature* that had been contradictory throughout previous human creativity. A new understanding

of the Kosovel cons results from newly discovered sources that the poet took into account: the Russian constructivists, Einstein's physics and post-Euclid geometry. Kosovel speaks of the power of science and policy, and stipulates that art should become equal to them. Kosovel's spatial songs are therefore a rebellion against logical categories and the space that we have inherited from the Greeks; they are a rebellion against geocentrism and earth gravity because we need to read the poems starting at the end, which creates a flexible viewing that Kosovel formulated as a *flexible philosophy*. This strongly denies the thesis that (Russian) constructivism existed only in the visual arts and architecture, and not in literature, and confirms the hypothesis

that European literary constructivism existed due to Kosovel.

Due to its international importance, the monograph has been translated into English and Russian, because on the one hand it reflects Kosovel's poetry in a new way, and on the other it clearly documents a hitherto unknown transfer of Russian constructivism into (Slovenian) literature.

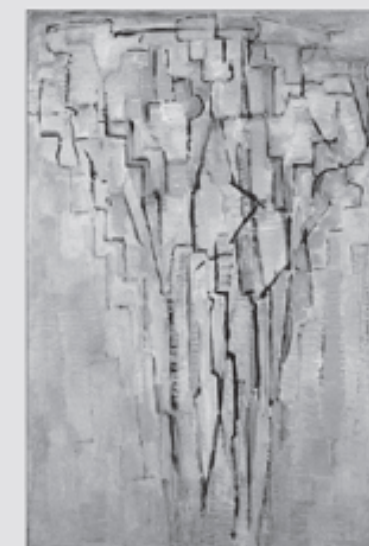


Янез Вречко: Конструктивизм и Косовел. Москва: Центр книги Рудомино. 2014. 288 стр. (Janez Vrečko: Konstruktivizm i Kosovel. Moskva: Centr knigi Rudomino. 2014. 288 str.) [COBISS.SI-ID 56254818]

Biblical echoes in postmodern thought

Does contemporary philosophical thought accomplish the modern Enlightenment project of overcoming and eliminating religion? The present monograph argues to the contrary, and joins the current line of research that claims the return of the religious. The author focuses on some leading representatives of postmodern philosophy (Heidegger, Levinas, Vattimo, Derrida, Marion) and examines their approaches with regard to elements and patterns of thought that derive from the Judeo-Christian tradition. These elements are not merely marginal, but instead belong to the essence of the postmodern turn, which is characterized by the deposition of the modern subject,

and the widening of the realm of rationality. The presence of the biblical heritage in contemporary philosophy poses an important challenge to both secular and theological thought, and simultaneously opens up new possibilities for a dialogue between them.



Branko Klun
ONKRAJ BITI
Biblični odmevi v postmoderni misli



Source: Klun, Branko. *Onkraj biti: biblični odmevi v postmoderni misli*. (Knjižna zbirka KUD Logos, 46). Ljubljana: KUD Logos, 2014. 256 str. ISBN 978-961-6519-82-3. [COBISS.SI-ID 276540160]



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