# CEITEC news

## EXTERNAL NEWSLETTER 01/2012

External electronic Newsletter, March 2012

## Dear friends,

CEITEC began its first full year of real operations in January. Events and activities are continuously gaining even more momentum. The **new Executive** and the **Scientific Directors** shall be selected in the coming weeks; **CEITEC CMS savings** are being used for new programmes to support interdisciplinary projects and quality; and we are starting regular informal meetings – **CEITEC Workshops** – in the onslaught of upcoming events these should be the ones you pencil-in into your calendars in red so that you can effectively learn what's new, who's who, what they do and what you can learn from them.

With every new beginning there are misunderstandings and unmet expectations. However, never before has such a strong commitment to quality and excellence been more clearly articulated. The outcome of the Common Evaluation and the first-class international personalities that will soon join CEITEC's executive management shall once and for all convince everybody, both inside and out, that in several years CEITEC will indeed have become "one of those really good places that do science". •●

**Tomáš Hruda**, Executive Director

## Content

# CEITEC signed the Memorandum of Understanding with EMBL

Masaryk University, on behalf of the Central European Institute of Technology, signed the Memorandum of Understanding on Scientific Collaboration with the European Molecular Biology Laboratory (EMBL). CEITEC is the only Czech institution having set up such an exclusive partnership with EMBL. Its aim is to develop cooperation between EMBL and the Czech Republic towards establishing the Czech Republic as an EMBL member, for which we are hopeful that this will be achieved in 2013, as well as enhancing cooperation between CEITEC and EMBL. This cooperation includes such activities as training, in particular, in joint workshops; joint research projects, which may include scientific exchanges; participation in major conferences; cooperation in the field of major research infrastructure projects such as ELIXIR and EuroBioImaging; and the exchange of data on research performance.

*EMBL is an intergovernmental organisation conducting research in the field of molecular biology, established on the basis of the EMBL agreement and comprising twenty Member States, with its headquarters in Heidelberg, Germany, represented by Director General Prof. Iain W. Mattaj.* •●

# Czech scientists are becoming a part of a European network of centres for structural biology

Breakthroughs in biomedical science are a step closer today with the launch of "Instruct", a new European infrastructure in the field of structural biology. The Central European Institute of Technology, Masaryk University (CEITEC MU) is joining the project as the representing partner from the Czech Republic. The Czech Republic is among the first eight countries to become involved in the establishment of Instruct; the founding agreement was signed on 23rd February. As a result, scientists from participating countries will benefit from the use of the most advanced technologies. All Czech scientists in the field of structural biology will be able to access the very best technology and use unique technologies and facilities in any of the participating countries. With the cooperation of the leading European scientific institutes in the field of structural biology, Instruct will provide academic scientists and commercial entities with access to facilities and technologies. This puts us in an exclusive club of leading institutes and experts in the field.

The status of an Instruct affiliated national centre, will be held by the Czech Integrated Infrastructure for Structural Biology (CIISB), which joins the Structural Biology Laboratories of the CEITEC centre and the Centre of Molecular Structure of the BIOCEV centre. It provides the Czech scientific community with the possibility of "open access" to the latest technologies and information from the field.
*More information can be found here.* •●

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# Marie Curie Actions Road Show 2012 in BRNO

We would like to cordially invite you to the **MARIE CURIE INFORMATION DAY**, organized by CEITEC, on **27th March** on the premises of the **Brno University of Technology Rectorate, Antoninska 1**. The presentations and discussions will be conducted in English. The individual consultations with the Czech National Contact Points for Marie Curie fellowships can be held in English or Czech. Marie Curie Information Day in Brno takes place with support of **Technology Centre AC CR, Czech Liaison Office for Research and Development (CZELO) in Brussels and InterBioNet project**.
PROGRAMME, REGISTRATION and more information can be found **here**.

At CEITEC, we have been introducing ourselves to young researchers from the whole of Europe as the sole Czech representative on the three-month tour with stops in Berlin, Paris, Rome, Bucharest, Warsaw and, also, in Brno. The main aim of Marie Curie Actions Road Show, held under the sponsorship of the European Commission, is to acquaint postgraduate students and scientists who are just beginning their careers with job opportunities made possible by European Marie Curie grants. *More information can be found* ***here***.

# Celebrations of 190th anniversary of G. J. Mendel´s birth

MENDEL 190
Celebration of G. J. Mendel's Birth Anniversary

A minimum of three Nobel Prize winners will be lecturing at the **Mendel Museum** at Masaryk University (MU) as part of the celebrations of this year's 190th anniversary of the birth of the founder of genetics, Gregor Johann Mendel. The programme, which has been prepared by the Masaryk University and the Old Brno Abbey in cooperation with other 28 partners, will offer a series of lectures for the expert as well as general public and include conferences and exhibitions. The celebrations were launched with a ceremonial blessing of a tramway dedicated to commemorating the anniversary of Mendel's birth in the streets of Brno all year round. As you could notice on the tramway itself, CEITEC is a proud partner of this event. *More information can be found* ***here***.

# CEITEC presented itself at the Brno University of Technology Open Days

The Institute took part in the Brno University of Technology's Open Days in January. CEITEC representatives from the Faculty of Chemistry along with the Faculty of Mechanical Engineering and the Faculty of Electrical Engineering and Communication introduced their respective research activities and projects as well as outlining opportunities for future employment for students of secondary schools and universities in the centre of excellence. *More information can be found* ***here***.

*The CEITEC Open Houses were organised within the* ***SYLICA*** *project, which has been supported from the 7th Framework Programme, Research Potential scheme.*

# Interview with CEITEC Scientists

## Martin Anger, DVM., PhD.

CEITEC - Veterinary Research Institute, Brno, Czech Republic
Group leader, Mammalian Reproduction Research Group,
Molecular Veterinary Medicine Research Programme

The Academy of Sciences of the Czech Republic, Liběchov, Czech Republic
Group leader, **Laboratory of Cell Division Control**

**Curriculum Vitae** can be downloaded here.

### To begin, could you describe to us what you are dealing with in your research?

We are trying to find out in what way the mechanisms which control the division of chromosomes in oocytes and embryos change in the course of maternal aging. Primarily, we are trying to use animal models to study chromosome segregation control mechanisms and how these control pathways change during the course of aging, to determine the reasons why some cells divide chromosomes incorrectly. The wrong number of chromosomes always has a catastrophic effect for the further development of an embryo; it is often the cause of a miscarriage, or serious developmental and mental defects with children born. So we are comparing the cells from older and younger model animals, and in the future we would like to cooperate with reproduction clinics.

### You started to work on a similar technology at the Institute of Animal Physiology and Genetics, The Academy of Sciences of the Czech Republic in Liběchov near Mělník 4 years ago, where you returned after a seven-year-long working sojourn abroad. Why did you start working here after your return?

Before my departure to go abroad I had studied in a doctoral programme there so the return came sort of naturally. Another reason is also the fact that the Academy can provide the best conditions for establishing a new laboratory and a research team for scientists returning from abroad. This is, of course, due to the fact that it focuses more purely on research more than universities. I was also awarded the Fellowship of Jan Evangelista Purkyně from the Academy to establish a laboratory specializing in advanced microscopic methods. This grant is awarded by the Academy to scientists who are returning from abroad and who show promise in the future development of their research. It is given to only 2-4 people a year. The EMBO installation grant (European Molecular Biology Organisation for Young Investigators) also helped me establish the new laboratory; it is a prestigious grant which is awarded to only one or two researchers a year in each member country, and also the Marie Curie Reintegration Grant which I acquired following my Marie Curie Fellowship at the University of Oxford. Thanks to these grants I was able to establish a laboratory in Liběchov together with my colleagues, to acquire the basic equipment and to start experimenting in a relatively short time. Last June I joined the CEITEC project with my team, however I had participated in its preparation for the two previous years.

> *"CEITEC offers conditions and opportunities that are the basis for successful science abroad.*

### Why did you choose CEITEC as the next stage in work?

The Central European Institute of Technology offers conditions which have no equivalent here. Firstly, it offered us amazing possibilities in instrumentation and equipment; we were able to acquire special microscopes, thanks to which we have higher-quality results and this helps us progress more quickly, so this significantly advances our research. But the most substantial thing with CEITEC is the possibility of interconnecting with other research teams and the cooperation with many scientists from various fields. This is what comprises the basis of successful scientific work abroad.

### Who are you cooperating with the most at the moment? Are you considering starting cooperation with other colleagues too?

Currently we are cooperating very actively with the research team of Professor Jiří Rubeš (Animal Cytogenomics). Within the Czech Republic it is a unique team which has long-term experience and expertise in the area of chromosome analysis and chromosome defects in germ cells and embryos. We are studying how the division of chromosomes is controlled in live cells and they are able to analyse the results of this division, so we are using their knowledge and complementing each other perfectly. Beginning in September we are going to have two students who will be working in both laboratories at the same time, so our research will be entirely interconnected. Within CEITEC we would also like to start cooperation with colleagues who are engaged in microscopy and image analysis in the area of material sciences, and who would be able to develop better cultivation dishes for the long-term cultivation of oocytes and embryos. We already have some ideas. It is these concrete possibilities of interconnecting material and life sciences that I appreciate very much at CEITEC.

### You have a successful seven-year-long foreign working career behind you. How did you start?

After my graduation from the University of Veterinary and Pharmaceutical Sciences, Brno and the completion of the doctoral programme at the Academy of Sciences in Liběchov near Mělník, I completed a four-year postdoctoral stay at the Department of Biology at the University of Pennsylvania in Philadelphia, with Professor Richard Schulz. At this point, I must say that, at that time, students normally wouldn't have the opportunity to travel abroad for long-term fellowships after their PhD graduation. Due to personal contacts of my tutor Professor Motlík, it was made possible for me. In 2005, I shortly worked at the IMP-Research Institute of Molecular Pathology in Vienna where I worked in the team of the director of the Institute, Professor Kim A. Nasmyth. Shortly after that he became the head of the Department of Biochemistry at the University of Oxford. I was very pleased when he offered me a position to continue working with him, so I moved to Oxford. During my postdoctoral research abroad I had the opportunity to work at prestigious scientific institutions under the leadership of great people in current science and I value this experience highly in further development of my career.

### In what way was this experience the most beneficial for you?

It has benefitted me in many ways, not only professionally but also in my personal life as well. It is a great experience to have the opportunity to work in a top international team and participate in the research with a large impact on our knowledge about the functioning of cells. When a person is lucky enough to become a part of such laboratory it gives them invaluable experience in their professional life. For example, professor Nasmyth is not only a brilliant scientist but also an excellent manager. His main task after arriving at Oxford was to reorganize the Department of Biochemistry into a modern biomedical research centre, which he clearly succeeded in doing. Under his leadership there was also a modern building constructed for a new Department, which is also interesting from the architectural point of view. It was designed in order to enable interactions between students and scientists of various fields, which is without question the basis for success in science.

### What is the situation here? Do you think students and scientists cooperate sufficiently?

Czech science, with some exceptions, has a fundamental problem which lies in the isolation of individual teams. The most important place in Oxford was the University Club, where scientists met regularly, shared their experiences and learned about their colleague' work. New directions can originate only through the interconnection of more fields. The isolation of scientist and closed doors of laboratories and offices necessarily leads to a gradual stagnancy of the research of the whole team. New discoveries generally originate on the borderlines of fields. It is necessary to create mechanisms which will enable inter-field interactions and contacts on many levels within research institutes. In CEITEC I can see the potential. In 2014 the scientists will move to large shared campuses, where they will have not only state-of-the-art infrastructure and facilities for work, but they will also meet regularly. CEITEC combines tutorial programmes of several various directions, thanks to which their interconnection and synergy is created. This is what works naturally in the west. And I am glad that CEITEC has started these activities and supports them significantly.

### Does it not work differently abroad also because of better conditions and possibilities which our scientists do not have?

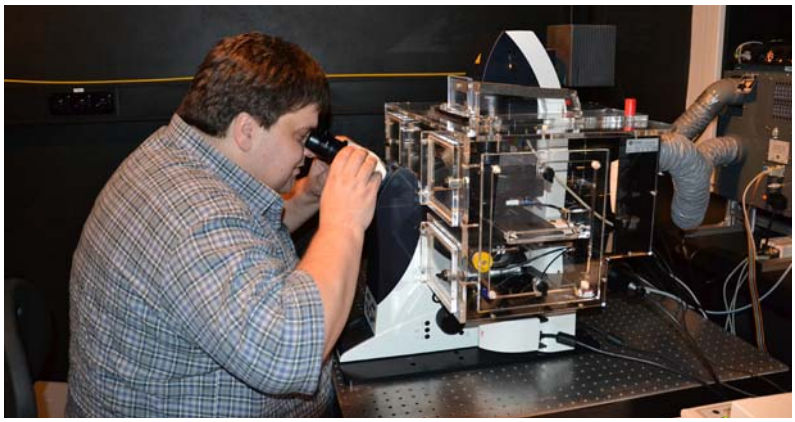
Definitely, but here we are back at the support of inter-field character and mutual communication. There were about 25 of us in one laboratory in Oxford and almost each of us was of a different nationality! The laboratories work 24/7 there. It does not happen that you do not meet anybody in the laboratory at 6 p.m. Within large universities there is also the possibility to buy needed chemicals at any time of day or night. Large research centres abroad aim to create absolutely ideal conditions for work so that people who get the chance to work there can reach the best results. People and their working conditions are the most important elements in research. Such research centres are mainly concerned with motivation. Most of them know exactly why they are there; they have their targets and the motivation to show what is inside of them. They do not want to waste a second so as not to miss their great opportunity. The motivation of students is a huge problem here. Students who do not have a clear idea of exactly what they want to do in life and who regard studying as a means to put off a final decision frequently start PhD studies. But I think that it is known now that there are too many students at universities and in PhD programmes and it is not necessary to go into details; it is a systemic problem. To be specific, Professor Nasmyth choose his students very carefully and out of a number of applicants he took on only a very few people. He used to exaggerate that his letter of reference is more important than a publication. It was a fantastic experience in Oxford, perfect cooperation and interaction with very gifted talents. But the whole attitude is different too. Nowadays the aim to apply a systematic approach to biology prevails, without the limitations to one molecule only or an organism. This is where we are quite a way behind compared to advanced foreign research institutions. We are burdened by a huge amount of administration and often also by unsuitable structures of research organizations, i.e. professor system, which does not allow for the formation of new teams and directions.

### Is it also due to the fact that in the west there is an entirely different approach to the support of science by the government and state?

Mainly so. Science is managed by people who understand it. Unfortunately, it is not like that here. What is missing here the most is the openness towards interchanges abroad such as exchange stays of foreign workers; international exchanges of students and post-doctoral researchers is the engine which drives the science abroad. Knowledge and new procedures are spread by a process linked to the exchange of workers among research centres. And, unfortunately, we participate in this process only sporadically. The fact that there are foreign students studying at our schools in undergraduate studies is very positive, but not sufficient as such. We need to acquire trained and experienced foreign workers, who will be able to introduce new technologies and methods here.

> *"The problem of isolation of Czech science is urgent. It is good that many of our students and researchers go abroad and return, but we need to attract more foreign workers here.*

That is what I hope for from centres like CEITEC; that they will create such conditions that will make possible and support such efforts. It will also be essential to break down the bureaucracy and inflexibility at the relevant offices and authorities. I personally tried to acquire 2 young talented scientists from India into my team but when the visa application process took 6 months and still was not completed, they ran out of patience. Now we have acquired a grant for the support of the international collaborations of our team, within which a scientist is to join our team. This individual got his PhD in Japan and masters techniques that we urgently need for research. Now I am worried that it might end in the same way as our previous attempts. That would be a terrible shame. As to the equipment, there are basically the same opportunities here as they have abroad, but in science everything is based on talented people. That is why we have to think of a way how to get such people here. I hope that also, thanks to the fact that CEITEC will have a truly international management headed by the Executive and Scientific Directors from abroad, this condition will be improved in future.



### In conclusion, how would you recommend young scientists to succeed abroad

It is necessary not to be frightened and try it. They will surely be exposed to pressure and competition which is unusual for us, but mostly they will find out that science is a beautiful adventure if it can be done without limitations. And this will not leave them.

## Selected CEITEC Publications

### Journal of Hazardous Materials

**Electrochemistry of copper(II) induced complexes in mycorrhizal maize plant tissues**

**Zitka, O.; Merlos, M. A.; Adam, V.; Ferrol, N.; Pohanka, M.; Hubalek, J.; Zehnalek, J.; Trnkova, L.; Kizek, R.**

CEITEC Research Group: **Submicron Systems and Nanodevices**
Research Programme 1: **Advanced Nanotechnologies and Microtechnologies**

Summary

Aim of the present paper was to study the electrochemical behavior of copper(II) induced complexes in extracts obtained from mycorrhizal and non-mycorrhizal maize (Zea mays L.) plants grown at two concentrations of copper(II): physiological (31.7 ng/mL) and toxic (317 _g/mL). Protein content was determined in the plant extracts and, after dilution to proper concentration, various concentrations of copper(II) ions (0, 100, 200 and 400 _g/mL) were added and incubated for 1 h at 37 °C. Further, the extracts were analyzed using flow injection analysis with electrochemical detection. The hydrodynamic voltammogram (HDV), which was obtained for each sample, indicated the complex creation. Steepness of measured dependencies was as follows: control 317 _g/mL of copper < control 31.7 ng/mL of copper < mycorrhizal 31.7 ng/mL of copper < mycorrhizal 317 _g/mL of copper. Based on these results it can be concluded that mycorrhizal fungus actively blocks transport copper(II) ions to upper parts of a plant by means of adsorbing of copper(II) in roots. Rapid complex formation was determined under applied potentials 300, 500 and 600 mV during the measuring HDVs. It was also verified that mycorrhizal colonization reduced root to shoot translocation of Cu(II) ions.

## Materials Letters

### Processing of phase pure and dense bulk EuTiO3 ceramics and their infrared reflectivity spectra

Kachlik, M.; Maca, K.; Goian, V.; Kamba, S.

CEITEC Research Group: Advanced Ceramic Materials
Research Programme 2: Advanced Materials

Summary

The aim of this work was to prepare phase pure and dense EuTiO3 ceramics and to establish their infrared reflectivities. Two kinds of stoichiometric powder mixture (Eu2O3+Ti2O3 and Eu2O3+TiO2) were used asprecursors for shaping green bodies by cold isostatic pressing. Dense bulk samples were prepared bypressure-less sintering in reducing (Ar+7%H2, 100%H2) conditions in a temperature range of 1300–1650 °C. The sample prepared from Eu2O3+TiO2 powder mixture sintered in pure hydrogen at a temperature of 1400 °C for 2 hours exhibited a relative density higher than 95%TD and 100% phase purity, which resulted in its high infrared reflectivity affected by neither low density nor phase impurities.

## Journal of the American Chemical Society

### NMR cross-correlated relaxation rates reveal ion coordination sites in DNA

Fiala, R.; Špačková, N.; Foldynová-Trantírková, S.; Šponer, J.; Sklenář, V.; Trantírek, L.

CEITEC Research Group: NMR Spectroscopy and Structure and Dynamics of Nucleic Acids
Research Programme 3: Structural Biology

Summary

A novel NMR method is demonstrated for the identification of the preferential coordination sites between physiologically relevant counter-ions and nucleic acid bases. It the proposed method, NMR cross-correlated relaxation rates are monitored as a function of increasing ion concentration. It is demonstrated that the changes in the counter-ion concentration lead to sizable variations of the cross-correlated relaxation rates, revealing thus the ion coordination sites. The method can be used to cross-validate and/or complement direct but artifact-prone experimental techniques such as X-ray diffraction, NMR analysis with substitutionary ions, and molecular dynamics simulations.

## International Journal of Electrochemical Science

### Electrochemical Biosensor for Detection of Bioagents

Švábenská, E.; Kovář, D.; Krajíček, V.; Přibyl, J.; Skládal, P.

CEITEC Research Group: Nanobiotechnology
Research Programme 3: Structural Biology

Summary

Simple and rapid detection and identification of dangerous bioagents is important for preventing illness or even death of people due to infectious diseases and bioterrorist threats. Electrochemical detection has a large potential for development of portable instrumentation suitable for analysis in field and especially combination with specificity of immunoassays seems promising. The electrochemical immunosensor employed Au nanoparticles and peroxidase label for detection of model microbial cells of B. subtilis. Within 20 min, 1000 CFU/ml were successfully measured and confirmed using atomic force microscopy. This result is promising for combination of the immunosensor with a cyclone sampler and analysis of Bacillus-based bioaerosols.

## Phytochemistry

### Engineering the cytokinin-glucoside specificity of the maize b-D-glucosidase Zm-p60.1 using site-directed random mutagenesis

**Filipi, T.; Mazura, P.; Janda, L.; Kiran, N.S.; Brzobohaty, B.**

CEITEC Research Group: **Developmental and Production Biology – Omics Approaches**
Research Programme 4: **Genomics and Proteomics of Plant Systems**

Summary

The maize b-D-glucosidase Zm-p60.1 releases active cytokinins from their storage/transport forms, and its over-expression in tobacco disrupts zeatin metabolism. Our findings reveal complex relationships among the amino acid residues that modulate substrate specificity and show the utility of site-directed random mutagenesis for changing and/or fine-tuning enzymes. Preferential cleavage of specific isomer-conjugates and the capacity to manipulate such preferences will allow the development of powerful tools for detailed probing and fine-tuning of cytokinin metabolism in planta.

## Leukemia

### Antigen receptor stereotypy across B-cell lymphoproliferations: the case of IGHV4-59/IGK V3-20 receptors with rheumatoid factor activity

**Kostareli, E.; Gounari, M.; Janus, A.; Murray, F.; Rochet, X.; Giudicelli, V.; Pospisilova, S.; Oscier, D.; Fotonu, L.; di Celle, P.F.; Tichy, B.; Pedersen, L.B.; Jurlander, J.; Ponzoni, M.; Kouvatsi, A.; Anagnostopoulos, A.; Thompson, K.; Darzentas, N.; Lefranc, M.P.; Belessi, C.; Rosenquist, R.; Davi, F.; Ohia, P.; Stamatopoulos, K.**

CEITEC Research Group: **Medical Genomics**
Research Programme 5: **Molecular Medicine**

Summary

Rheumatoid factors (RFs) are the most frequent autoantibodies in autoimmune disorders, especially rheumatoid arthritis and primary Sjögren's syndrome (SS). RFs may also develop as a monoclonal component in B-cell lymphoproliferations, including type-II mixed cryoglobulinemia (MC-II). MC-II develops almost exclusively in individuals infected with the hepatitis C virus (HCV) and is characterized by the presence of immune complexes composed of monoclonal IgM binding to polyclonal IgG that exhibit anti-HCV reactivity. The monoclonal IgM almost always carries kappa light chains and represents autoantibodies with RF activity.

## Blood

### MicroRNA-650 Expression Is Influenced by Immunoglobulin Gene Rearrangement and Affects the Biology of Chronic Lymphocytic Leukemia

**Mraz, M.; Dolezalova, D.; Plevova, K.; Stano Kozubik, K.; Mayerova, V.; Cerna, K.; Musilova, K.; Tichy, B.; Pavlova, S.; Borsky, M.; Verner J.; Doubek, M.; Brychtova, Y.; Trbusek, M.; Hampl, A.; Mayer, J.; Pospisilova, S.**

CEITEC Research Group: **Medical Genomics**
Research Programme 5: **Molecular Medicine**

Summary

MicroRNAs (miRNAs) play a key role in chronic lymphocytic leukemia as well as in normal B cells. Notably, miRNA gene encoding miR-650 and its homologs overlap with several variable (V) subgenes coding for lambda immunoglobulin (IgL_). Recent studies describe the role of miR-650 in solid tumors, but its role in chronic lymphocytic leukemia (CLL) has not yet been studied. Our experiments demonstrate that miR-650 expression is regulated by coupled expression with its host gene for IgL_. This coupling provides a unique yet unobserved mechanism for microRNA gene regulation. We determine that higher expression of miR-650 is associated with a favorable CLL prognosis and influences the proliferation capacity of B cells.We also establish that in B cells, miR-650 targets proteins important in cell proliferation and survival: cyclin dependent kinase 1 (CDK1), inhibitor of growth 4 (ING4), and early B-cell factor 3 (EBF3). This study underscores the importance of miR-650 in CLL biology and normal B-cell physiology.

## Leukemia

### ERIC recommendations on TP53 mutation analysis in Chronic Lymphocytic Leukemia

**Pospisilova, S.; Gonzalez, D.; Malcikova, J.; Trbusek, M.; Rossi, D.; Kater, A.P.; Cymbalista, F.; Eichhorst, B.; Hallek, M.; Döhner, H.; Hillmen, P.; van Oers, M.; Gribben, J.; Ghia, P.; Montserrat, E.; Stilgenbauer, S.; Zenz, T.**

CEITEC Research Group: **Medical Genomics**
Research Programme 5: **Molecular Medicine**

Summary

Recent evidence suggests that -- in addition to 17p deletion -- TP53 mutation is an independent prognostic factor in chronic lymphocytic leukemia (CLL). Data from retrospective analyses and prospective clinical trials show that B5% of untreated CLL patients with treatment indication have a TP53 mutation in the absence of 17p deletion. These patients have a poor response and reduced progression-free survival and overall survival with standard treatment approaches. These data suggest that TP53 mutation testing warrants integration into current diagnostic work up of patients with CLL. There are a number of assays to detect TP53 mutations, which have respective advantages and shortcomings. Direct Sanger sequencing of exons 4--9 can be recommended as a suitable test to identify TP53 mutations for centers with limited experience with alternative screening methods. Recommendations are provided on standard operating procedures, quality control, reporting and interpretation. Patients with treatment indications should be investigated for TP53 mutations in addition to the work-up recommended by the International workshop on CLL guidelines. Patients with TP53 mutation may be considered for allogeneic stem cell transplantation in first remission. Alemtuzumab-based regimens can yield a substantial proportion of complete responses, although of short duration. Ideally, patients should be treated within clinical trials exploring new therapeutic agents.

## Nature

### Serial translocation by means of circular intermediates underlies colour sidedness in cattle

**Durkin, K.; Coppieters, W.; Drögemüller, C.; Ahariz, N.; Cambisano, N.; Druet, T.; Fasquelle, C.; Haile, A.; Horin, P.; Huang, L.; Kamatani, Y.; Karim, L.; Lathrop, M.; Moser, S.; Oldenbroek, K.; Rieder, S.; Sartelet, A.; Sölkner, J.; Stålhammar, H.; Zelenika, D.; Zhang, Z.; Leeb, T.; Georges, M.; Charlier, C.**

CEITEC Research Group: **Animal Imunogenomics**
Research Programme 7: **Molecular Veterinary Medicine**

A study dealing with the genetic basis of colour sidedness in cattle was published in the publication Nature at the beginning of February. The results of the work were accepted by this prestigious scientific publication due to the discovery of a genetic mechanism that had previously been unknown. It focuses on the results of international cooperation with the participation of Petr Hořín from the Faculty of Veterinary Medicine, Veterinary and Pharmaceutical University. Petr Hořín is an employee of the Central European Institute of Technology, Veterinary and Pharmaceutical University (CEITEC VFU), even though the publication neither thematically refers to the issue being resolved at CEITEC VFU nor does it include a CEITEC dedication. It is noteworthy that both of the principal author's workplaces are European Veterinary Faculties and, consequently, it is possible to aspire to top quality research at Veterinary Universities. This finding should encourage the operations already launched at the Central European Institute of Technology and at CEITEC VFU.