DBM FACTS

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Universität Basel, Universitätsspital Basel und
Universitäts-Kinderspital beider Basel

Understanding how the brain makes sense of sounds | The veterinary services at the University of Basel: A glimpse behind the scenes | "How is Christmas celebrated in Alsace?"

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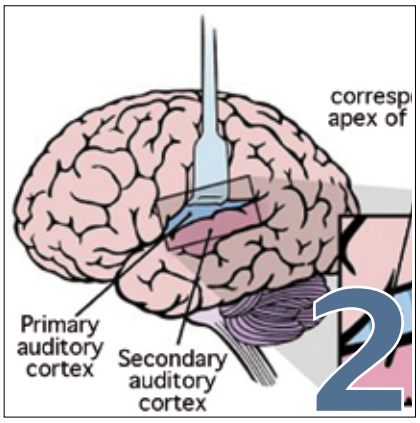
Departement Biomedizin Basel



Understanding how the brain makes sense of sounds
from Tania Rinaldi Barkat

The veterinary services at the University of Basel: A glimpse behind the scenes
from Caroline Johner

The English Tea Time
from Hilary Ireland

"How is Christmas celebrated in Alsace?"
from Martine Singer

Jahresrückblick

IMPRESSUM

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UNI BASEL

EDITORIAL

Radek Skoda
Leiter DBM

Liebe Leserinnen und Leser

2015 neigt sich seinem Ende zu. Viel Positives gibt es zu berichten: Das 15jährige Jubiläum mit seinem international besetzten Symposium und den Feierlichkeiten waren Momente, an die wir uns alle gerne erinnern. Wir gratulieren Nicola Aceto, der den prestigeträchtigen ERC Startup Grant erhalten hat und nun seine Forschungsgruppe am DBM Mattenstrasse aufbauen wird. Herzlichen Glückwunsch auch an Claudia Cavelti und Sara Meyer, die je ein Ambizione-SCORE Fellowship des SNF erhalten haben und neu zum Kreis der Forschungsgruppenleiterinnen gehören! Schliesslich freuen wir uns, dass das Rektorat und die Universität unser "International PhD Program in Biomedicine" offiziell anerkannt haben.

Wir trauern um Paolo Bianco, Mitglied unseres Advisory Boards, der Anfang November viel zu früh verstarb. Mit seiner Kompetenz und seiner Weitsicht hat er über viele Jahre strategische Entscheidungen des DBM beeinflusst. Er hinterlässt eine schmerzliche Lücke und er wird uns fehlen.

Der Neubau des DBM auf dem Campus Schällemätteli nimmt mit der Wahl des Siegerprojektes des Architekturbüros Caruso St. John konkrete Gestalt an (siehe Seite 36).

In der letzten Ausgabe des Jahres stellt uns Tania Rinaldi Barkat den Tätigkeitsschwerpunkt ihrer Forschungsgruppe "Brain and Sound" vor (Seite 2). Caroline Johner lässt uns hinter die Kulisse der Tierbetriebe blicken (Seite 8). "Very British" wird es, wenn wir mit Hilary Ireland einen echten englischen "Afternoon Tea" zu uns nehmen (Seite 29), bevor wir zurück auf dem Kontinent mit Martine Singer Französische Weihnachten feiern (Seite 32).

Schöne Festtage und einen guten Rutsch ins 2016!

Dear Readers

2015 is drawing to a close and there are many highlights to share: The 15 year anniversary celebrations and International symposium are moments that we all remember fondly. We congratulate Nicola Aceto, who was awarded the prestigious ERC Start-up Grant and is now building up his research group at DBM Mattenstrasse. Congratulations also go to Claudia Cavelti and Sara Meyer, who both received SCORE fellowships from the SNF and who now belong to the circle of research group leaders! And, finally, we are delighted that the rectorate and the university have both officially recognised our International PhD Program in Biomedicine.

We mourn the loss of Paolo Biano, a member of our advisory board, who died too young at the start of November. Over the years he greatly influenced the strategic decisions of the DBM with his competence and vision. He leaves behind a painful gap and will be sorely missed.

The construction of the new DBM on the Schällemätteli campus has taken definite form with the selection of the winning project from the architects of Caruso St. John (see page 36).

In this final edition of the year Tania Rinaldi Barkat introduces us to the key aspects of research in her group Brain and Sound (page 2). Caroline Johner gives us a behind the scenes look at animal services (page 8). Things are "very British" when Hilary Ireland brings us to a proper afternoon tea (page 29), before we return to the continent to celebrate a French Christmas with Martine Singer (page 32).

Happy holidays and wishing you all the very best for the New Year!

Understanding how the brain makes sense of sounds

Summary

The Brain and Sound Lab was created in January 2015 upon my arrival to the University of Basel from the University of Copenhagen. Ever since, my group has benefitted from the exciting neuroscience community of Basel, and enjoys fruitful exchanges with other research groups based at the Department of Biomedicine.

Our research aims at understanding how the brain makes sense of sounds and how groups of neurons process auditory information from the environment. We use different approaches to dissect the function of neuronal circuits in the mouse auditory cortex. Our goal is to identify the auditory neuronal circuits that process different sound features, to characterize their maturation process, to describe the relation of distinct cortical circuits to each other and, ultimately, to understand the role of the environment in shaping – or misshaping – them. The techniques suited to pursue these goals are electrophysiology, optogenetics, voltage sensitive dye imaging, viral neural tracing, behavioural readout and immunohistochemistry.

Describing the function of auditory circuits will contribute towards a richer understanding of normal sensory function, and will hold the key for remediating abnormal auditory signal processing following a history of compromised hearing or deafness.

Our understanding of the auditory cortex is lacking behind

Hearing sounds and being able to distinguish their specific features is crucial for human communication. In mammals, hearing is performed by the auditory system: vibrations are detected by the ear and transduced into nerve impulses perceived by the auditory cortex in the brain (Figure 1). People who suffer from central auditory processing abnormalities are affected in their daily lives and might not be able to appreciate even the most basic verbal communication. Tinnitus, in which phantom sounds are experienced in the absence of acoustic stimulation (Eggermont, 2008), is an example of a pathology related to abnormal neural plasticity in the central auditory system (Guitton, 2012). More than 10% of the population suffers from it (Holmes and Padgham, 2011).

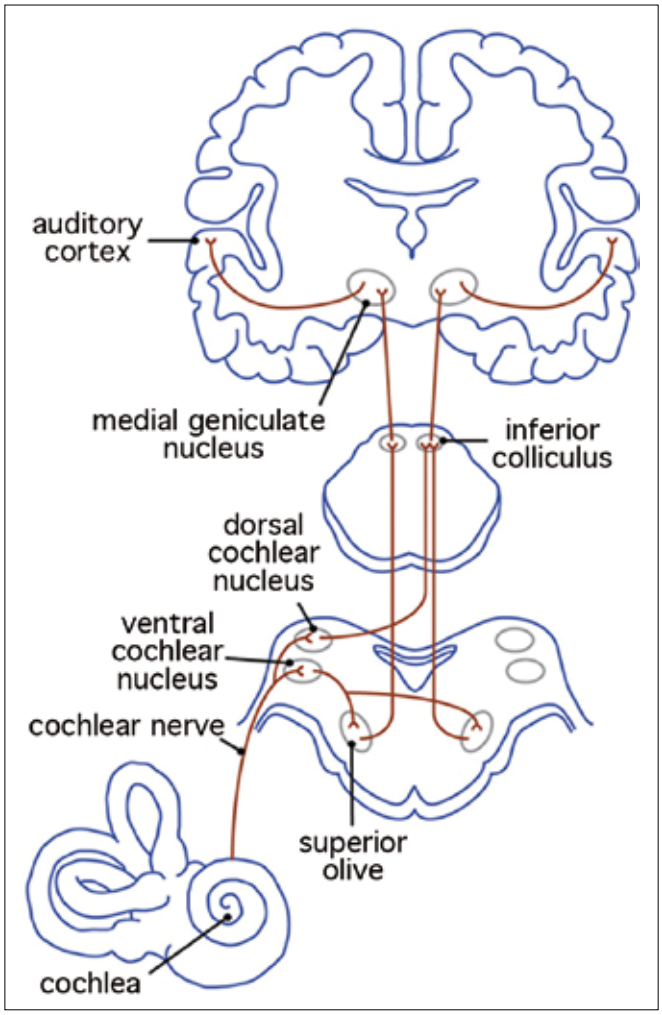

Figure 1: The afferent auditory pathway, from the cochlear to the auditory cortex.

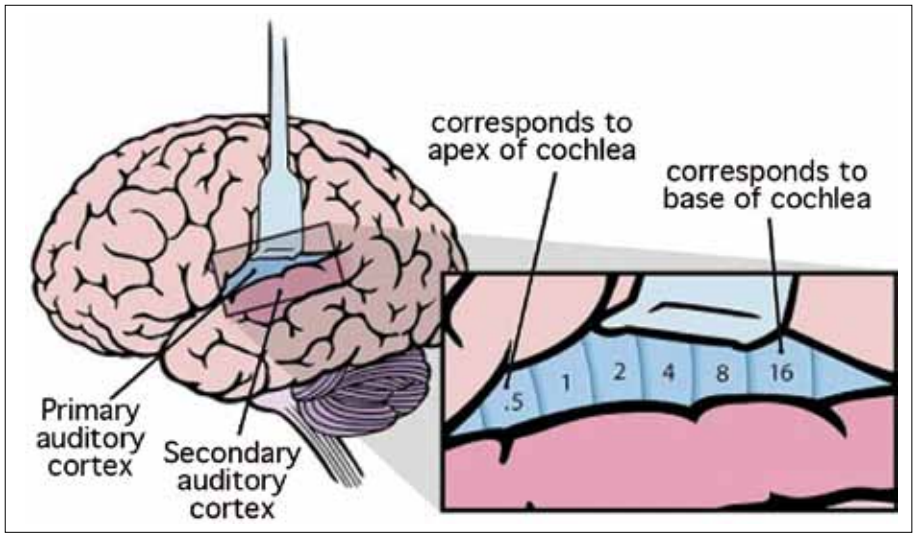

Figure 2: Tonotopic organisation in the primary auditory cortex

Despite the importance of hearing in human communication, we still understand very little of how sounds are perceived and how they are processed in the auditory cortex. The periphery of the auditory system is better understood; the powerful cochlear implants or hearing aids used nowadays are model results of the translational research stemming from basic findings on the peripheral auditory system. However, the central auditory system, and the auditory cortex in particular, are still only poorly understood. Research has confirmed that the core part of the auditory cortex is, like the rest of the auditory pathway, tonotopically organized, meaning that sounds of similar frequencies activate neighbouring neurons (Figure 2; Stiebler et al., 1997). To get a better understanding of what neuronal circuits are involved in the perception of diverse sound features, we believe that studying the development of auditory responses in the cortex is a promising approach.

The auditory system develops asynchronously and can be modified during critical periods

From polyglots to virtuosi, human performance reflects the neural circuits that are laid down by early experience. There is an on-going quest to understand how these neural circuits explain distinct behavioural responses, and what the components and connectivity of these circuits are.

During development, cortical responses to different sensory features mature at distinct times. In the rat auditory cortex for example, responses to pure frequency tones reach maturity one week faster than responses to frequency modulated sweeps (Insanally et al., 2009). In parallel, perceptual skills emerge asynchronously. Human studies indicate that vowel perception is shaped before the perception of acoustic distinct consonants (Werker and Tees, 2005). Similarly, the detection of frequency modulation reaches a mature level about four years before amplitude modulation (Figure 3). Together, these findings indicate that the processing of distinct sound feature matures during distinct and successive time windows in postnatal development.

Developing cortical circuits are largely modulated by the external environment before they stabilize into more mature states. This process occurs during precise time windows defined as critical periods for plasticity (Hensch, 2004). It has been largely demonstrated that neural responses to specific sensory inputs can be modified during these critical periods. For example, exposing mice to a 7 kHz tone for three days during their second postnatal week significantly modifies their cortical tonotopy. More specifically, this exposure modifies the thalamic connections from the ventral part of the medial geniculate body to layer 4 pyramidal cortical neurons of the mouse primary auditory cortex (Figure 4; Barkat et al., 2011, Hackett et al., 2011). As this example illustrates, the study of critical periods for plasticity allows the identification of neural circuits by uniquely modifying a precise circuit and its corresponding neural responses with a specific sensory feature.

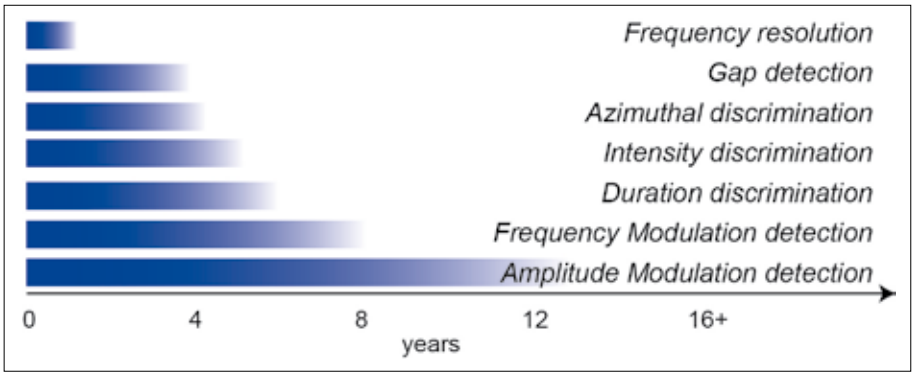

Figure 3. Ages at which different auditory perceptual skills reach a mature state in humans (adapted from Sanes and Woolley, 2011)

Furthermore, distinct sensory features are associated to different critical periods. In rodents, exposure to pure tones modifies auditory cortical organization in an earlier time window than exposure to more complex sounds. Moreover, exposure to pure sounds modifies brain organization in a different way than exposure to more complex inputs (Insanally et al., 2009). The fact that neural connections are being modified and shaped for appropriate responses during critical periods tells us that the brain is sensitive and plastic to distinct sound features during distinct developmental periods. The coincidence between the maturation of the response to a sound feature and the period of enhanced plasticity for the corresponding feature suggests that sensory development and plasticity involve the same cortical substrate.

Together, these observations indicate that the study of a critical period for plasticity can be used as "tweezers" to identify a specific neural circuit and relate it to the sensory feature it is processing.

A system approach to understand the auditory cortex

The Brain and Sound Lab explores the function of neuronal circuits in the mouse auditory cortex with a developmental approach. In particular, we aim to answer three fundamental questions:
How do cortical auditory responses develop and how can they be modified?
What neuronal circuits are involved in specific sound features, and how do they influence behavioural outcomes?
What influences does the environment have on shaping – or misshaping – these neuronal circuits?

The main techniques we use to answer our research questions are *in vivo* electrophysiology, optogenetics of targeted neuronal subpopulations, voltage-sensitive dye imaging, behavioural readouts, viral neuronal tracing and immunohistochemistry (Figure 5). *In vivo* extracellular recording, a technique used to assess neuronal responses to sensory stimuli in an intact brain, is the main technique used to quantify auditory responses and map the auditory cortex. Optogenetics, a technique combining optical and genetic tools to probe neural circuits at high temporal and spatial resolutions (Zhang et al., 2007), is used to selectively silence or activate targeted neuronal subpopulations. Voltage-sensitive dye imaging allows for recording fluctuations of the neuronal membrane potential with a millisecond time resolution. We use this technique to have a precise description of the dynamic of responses to sound stimulation across different auditory cortical areas. Behavioural experiments lead to the description of perceptual outcomes in the mouse models and conditions studied. Viral neuronal tracing serves to give the structural correlates of the studied functional neuronal circuits. Lastly, we use immunohistochemistry to quantify the amount of neuronal subpopulations during development.

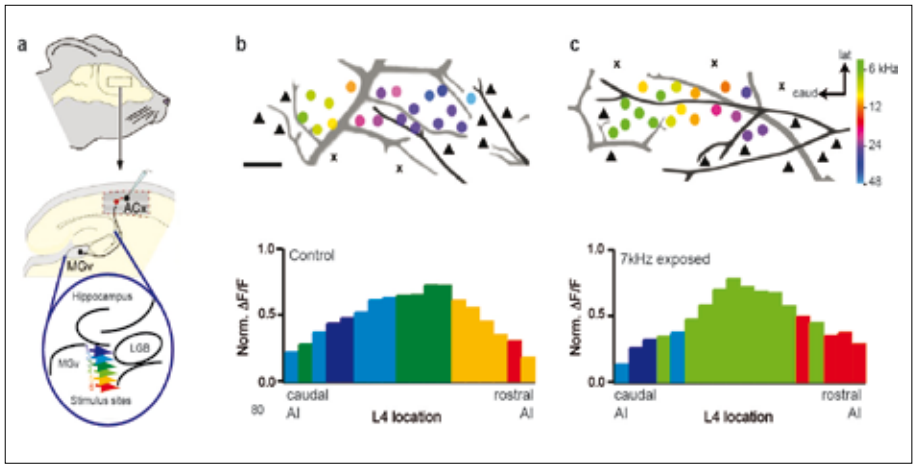

Figure 4. Sound frequency maps in auditory cortex (ACx) shaped by early acoustic experience. Neuronal activity recorded in the intact animal (b, upper panel) or in acute brain slices that preserved connectivity from auditory thalamus (MGv) to cortex (b, lower panel) exhibits a balanced sound spectrum in ACx (color). Passive tone exposure (7 kHz) during a brief developmental critical period distorts the map so as to over-represent the stimulus (c, green). Black and grey lines (upper panels) indicate reference blood vessel patterns on the cortical surface. Colored dots and bars represent best frequency in vivo (color scale) or MGv input in vitro (colored arrows), respectively, to that cortical site.

Ongoing and future projects

Our research plan includes five different projects aimed at:

1. Characterizing the development of auditory responses to sounds of increasing complexity, like frequency or amplitude modulated sweeps. We will also determine critical periods for these complex sounds, as well as factors controlling this developmental plasticity. The results will shed a new light on how the brain processes different sound features during development, and will identify what cortical circuits are engaged by specific sound features. By characterizing the plasticity of the auditory cortex, our research will eventually be crucial for remediating abnormal signal processing following compromised hearing in adults.
Stitipragyan Bhumika (postdoc) and Radhika Rajan (PhD student) will be the main contributors to this project.

2. Probing whether these circuits depend on the maturation or function of each other.
We will also assess the behavioural consequences of modifying a specific cortical circuit in auditory relevant tasks and describe the relationship of auditory cortical activity to perception and behaviour.
Together, these results will tell us to what extend a circuit associated to an early critical period has to be mature and functional before another circuit reaches maturity.
Radhika Rajan (PhD student) will be the main contributor to this project.

3. Defining the neuronal subpopulations involved in specific sound features and describing the corresponding behavioural phenotypes. Using optogenetics, auditory responses will be characterized following light-driven control of the excitability of subsets of inhibitory neurons. We will then assess the behavioural consequences of controlling targeted neuronal subpopulations in auditory relevant tasks.
The results will elucidate the role of neuronal subpopulations in the central auditory system. Our aim is to set the ground for a theory of auditory forebrain function.
Rasmus Christensen (postdoc located at Copenhagen University) and Mari Nakamura (research assistant) will be the main contributors to this project.

4. Determining the influence of the endocannabinoid system on the development and function of auditory circuits. Since endocannabinoid signalling modulates excitation, inhibition and plasticity in different brain areas, we will target this system to elucidate whether it is involved in defining critical periods.
If the results indicate that endocannabinoids shape critical periods in the auditory system, they could be used to potentially reopen plastic windows in adults.
Stitipragyan Bhumika (postdoc) will be the main contributor to this project.

5. Probing the influence of the environment on the rules regulating the development and plasticity of auditory circuits. The same experiments and measurements described previously will be applied to mice exposed to an abnormal auditory environment, like continuous

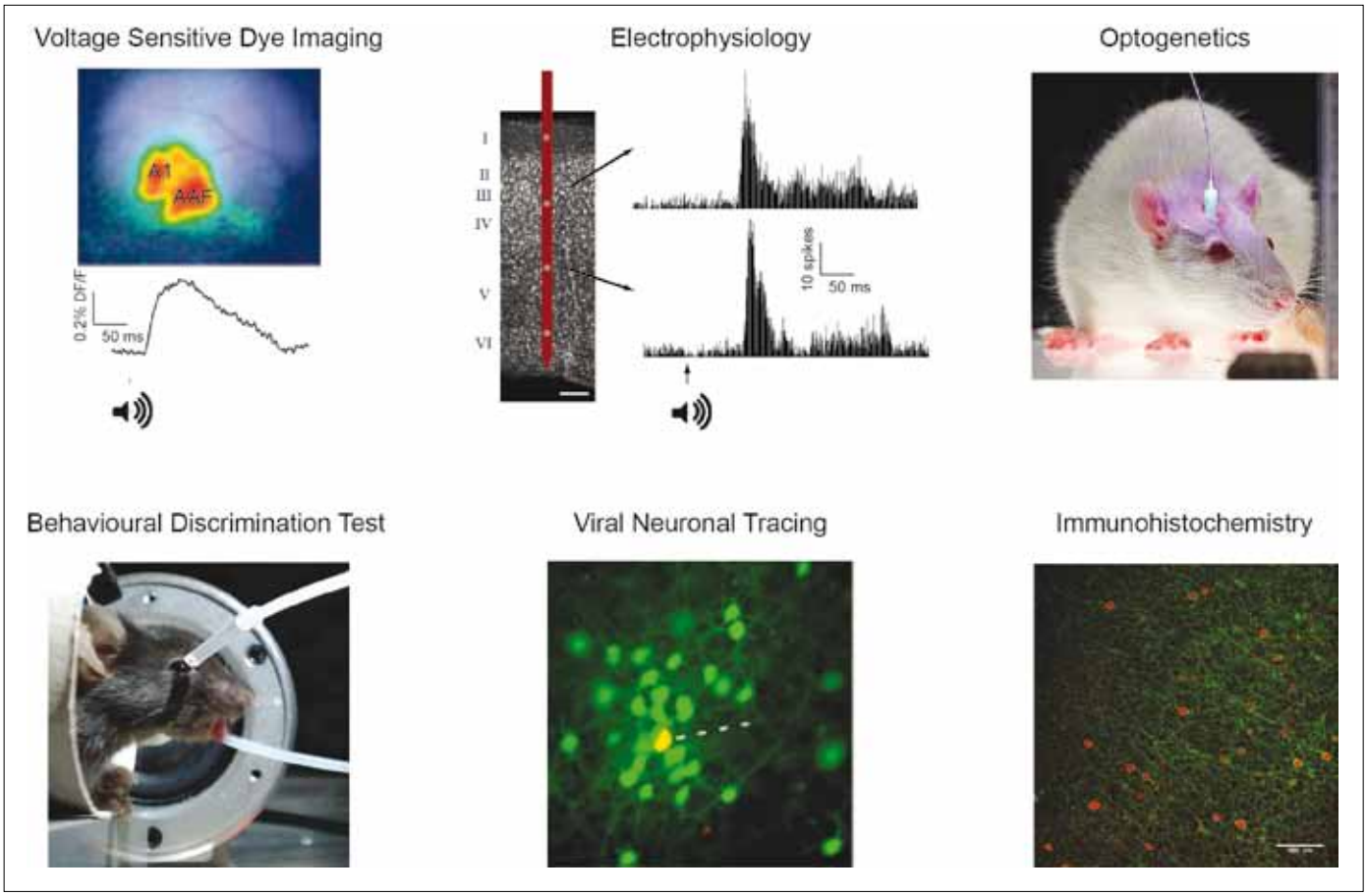

Figure 5. Techniques used in the Brain and Sound Lab to dissect the functions of the neuronal circuits in the mouse auditory cortex.

white noise, or to mice exposed to a non-auditory related stressful environment, like neonatal isolation.
The results will add to our understanding of the role of the external environment on shaping – or misshaping – neuronal circuits and behavioural phenotypes. This research will have an impact on the way we look at the constant occupational noise and emotional stress that we and our children are exposed to on a daily basis, ranging from background music, phone conversations, construction work or psycho-social distress.
Christina Sørensen (postdoc located at Copenhagen University) will be the main contributor to this project.

Outlook

The lab's results will provide a new understanding of how sounds are processed and perceived. Learning how distinct neural circuits code for auditory inputs of increasing complexity will shed light on the function of the auditory cortex, on the role of different circuits in characterizing the behavioural response to a sensory input, and eventually on the cause of abnormal signal processing in brain disorders. The results will contribute towards a richer comprehension of normal function and will hold the key for remediating abnormal auditory signal processing following a history of compromised hearing or deafness. Understanding how neural circuits process distinct sensory inputs and how their plasticity waxes and wanes with age will carry an impact far beyond neuroscience, including education policy, therapeutic approaches to developmental disorders or strategies for recovery from brain injury in adulthood.

Tania Rinaldi Barkat

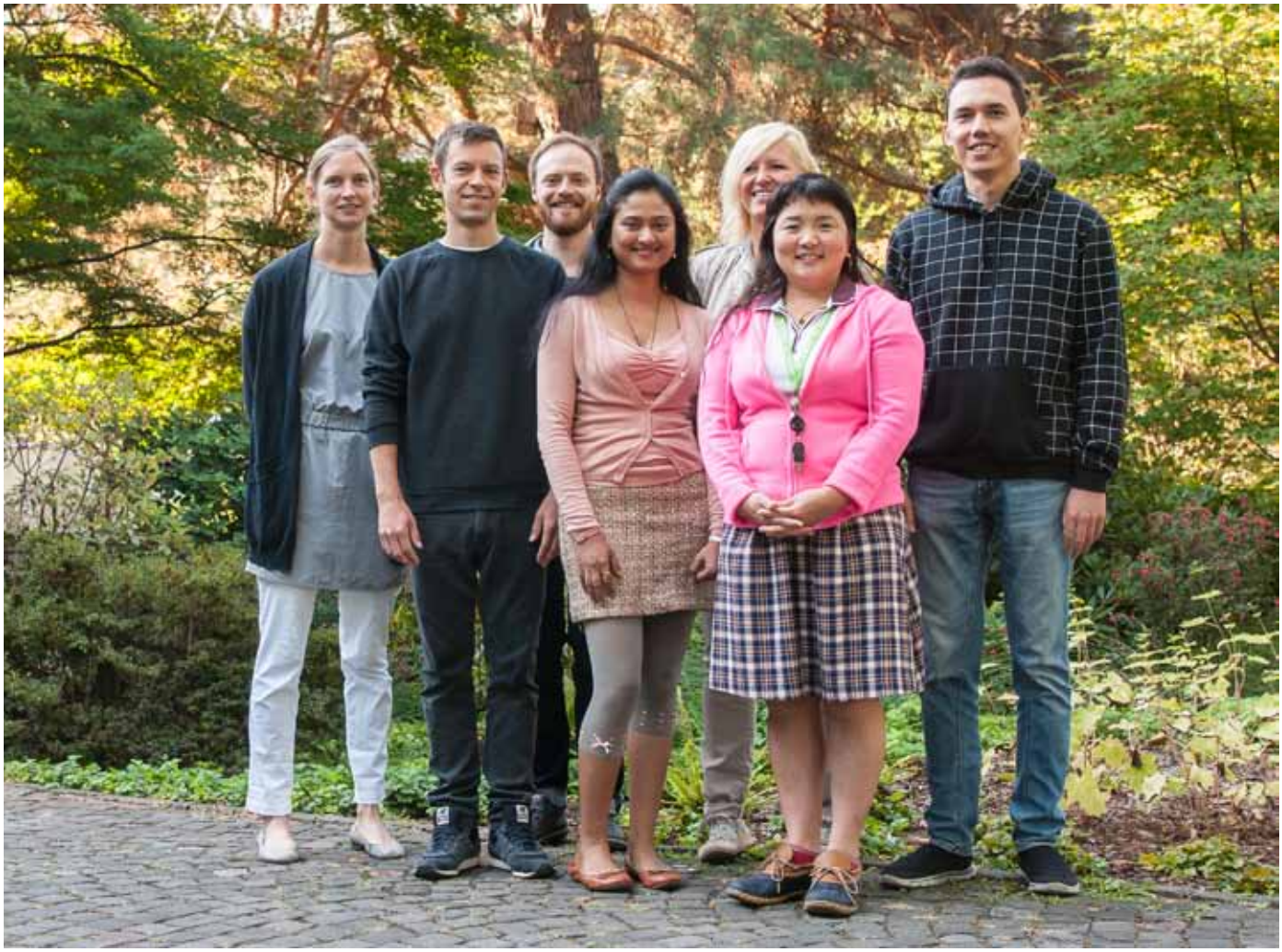

Figure 6. The Brain and Sound Lab. From left to right: Tania Rinaldi Barkat (group leader), Rasmus Kordt Christensen (postdoc), Henrik Linden (future postdoc), Stitipragyan Bhumika (postdoc), Ramona Felix (administrative assistant), Mari Nakamura (research assistant), Ivan Usov (former research associate). Missing: Christina Soerensen (postdoc), Radhika Rajan (PhD student).

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The veterinary services at the University of Basel: A glimpse behind the scenes

The veterinary services deal with the care and use of research animals at the University of Basel. We would like to take this opportunity to explain out work to you. Did you know that the Lab Animal Facilities of the University are spread throughout town at six different locations (DBM Hebelstrasse, DBM Mattenstrasse, DBM Petersplatz, DBM Pestalozzistrasse, WRO-1060, Biozentrum-Pharmazentrum) which maintain rodents and aquatic animals as well as two locations (the Department Environmental Sciences/Zoology as well as the Vesalianum programme MGU (Mensch – Gesellschaft – Umwelt)) which maintain fish like cichlids and gobies? DBM research group members exclusively make use of the first four facilities and WRO-1060 is a university-wide shared facility for all research groups. You may ask why there are so many facilities and if there is really a need for them? Considering the number of rodents currently used at the University of Basel outnumbers employees of the University of Basel by approximately a factor of ten and the number of students at least a factor of three – I think you can see that there clearly is, and will be, a need for good and decent housing and professional, monitored care of these animals.

Success in biomedical and environmental sciences depends largely on ground-breaking basic research which is, and will be, executed in living species, mostly rodents and zebrafish whose physiology most closely resembles that of humans. As application for, approval of, and tracking of animals used in research is strictly regulated in Switzerland, there is a need for efficient work with the least possible number of animals needed for a maximum output and with the least burden possible on the individual creature. Therefore, a large number of animal

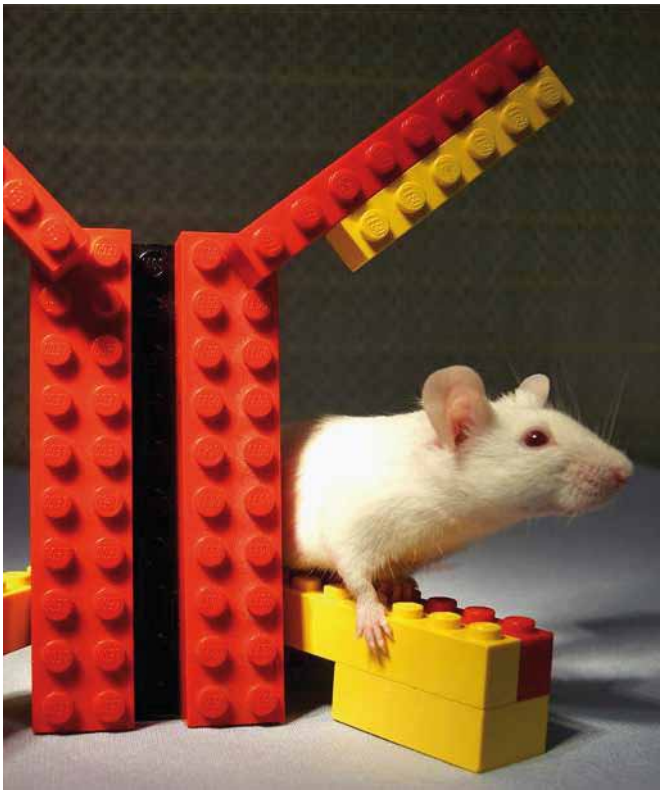
Goby

Zebrafish (Thanks to Martina Konantz)

carers, local heads of facilities, and the veterinary services team serve in the name of the university to support research. They reduce obstacles by filling the gaps between legislation, ethical problems, important research questions, researchers' wishes and available resources. An animal facility works in a 7-day/week mode as legislation demands obligatory monitoring intervals. Additionally, access for researchers must be granted at almost all times as experiments are often independent of office hours.

Taking all this into consideration the next logical developmental step was the re-organisation and centralisation of all animal facilities. The aim was, and still is, to implement easy and manageable rules for all parties involved at all existing facilities; to allow research to be more transparent to the audience, public, and authorities; to offer less contact with uninformed parties from outside university and research environment; to offer platforms for a university-wide exchange of information and research animals when desired; and to provide contact persons who deal with daily issues and are able to communicate with authorities.

Caroline Johner, who was briefly introduced in DBM facts 02/2014, took over the challenging role of leading all University animal facilities, thus gaining insight into researchers' work and becoming responsible for all animal facilities including personnel, financial and resource planning. Bettina Oswald, the animal welfare officer (AWO) at the University of Basel since 2010, facilitates communication with authorities concerning continuing education and licences. The use of research animals is only possible with valid permits from cantonal authorities and registration in a central, Swiss-wide register called e-Tierversuche. Each experiment conducted with animals in Switzerland, and also in other countries, needs a solid justification for the kind of experiment, the type and number of animals included, and must have individuals listed who have the proven capability to work with them. As laws and formalities strictly regulate this part of research, including documentation of all experiments and destiny of each individual research animal, she is the person in charge of overseeing your research concerning legislation.

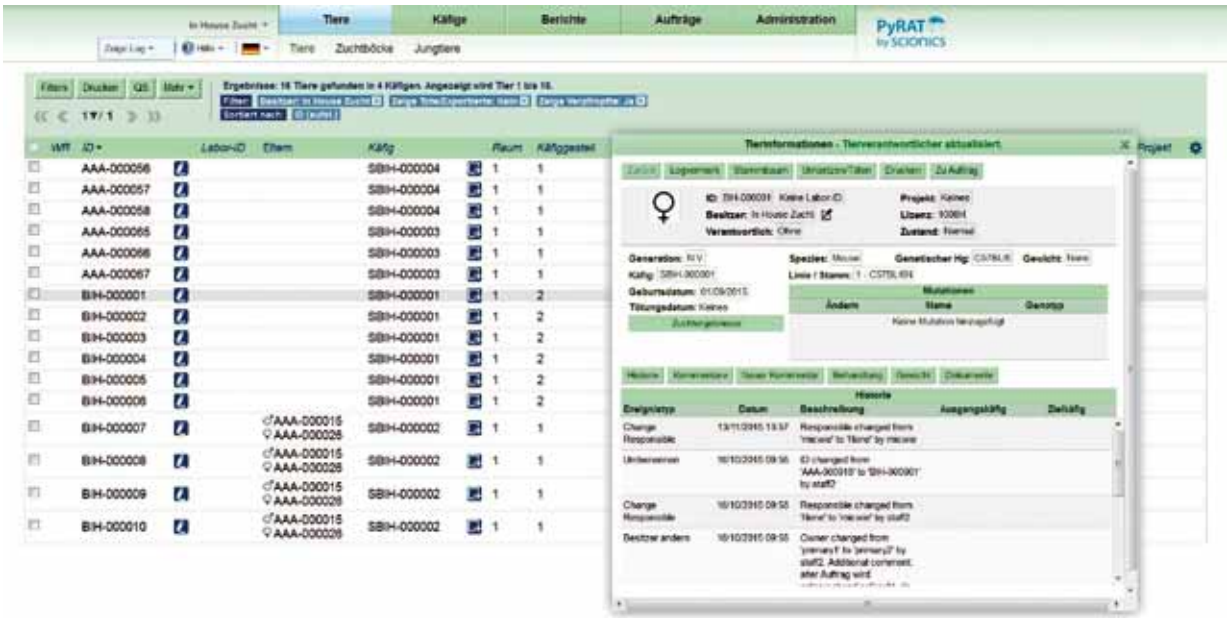


Mouse

Mouse maintenance

Although the legal framework for conducting experiments and maintaining an animal facility is very tight, unannounced inspections by the cantonal veterinary office and members of the cantonal ethics committee are performed on a regular basis. It is of utmost important to have qualified and well-trained personnel working with our animals. The training to become a certified animal carer takes three years. Likewise, established researchers and upcoming ones (master and PhD students) need to follow the legal requirements for qualifications before starting to work with animals. Continuing education is a life-long requirement for all. The experienced heads of our animal facilities have a wide variety of duties, among them are overseeing all work performed by their team and in the facility, dealing with daily organizational, hygienic, and logistical issues as well as demands by and support for researchers. Each facility is accompanied by a mouse user group (MUG) dealing with issues such as space allocations – successful research generates new research questions and hence needs more space for animals. The University is constructing new buildings such as the new Biocenter which is currently under construction and the new DBM, where the winning project was recently identified. Each building will be equipped with new animal facilities built according to the latest regulations, hygienic, and biosafety requirements.

The university-wide re-organisation of such an important and sometimes delicate topic such as animal research is still an ongoing process. In light of the centralisation, new animal management software that allows for animal tracking will also be introduced. This will simplify researchers' access to a database of their animals and, at the same time, allow us to correctly follow this information for proper reporting to authorities while additionally supporting all animal facility staff in their daily work. The new software, called PyRAT, which is currently also in a time-limited test-phase at DBM Hebelstrasse, will be implemented there in early 2016 making that facility the first profit by it. Subsequently, all University research groups will be connected step-by-step. For this task, Michael Wiedemann recently joined the team in July 2015. His major task is the education of



The upcoming software providing easy access from computers both in the animal facility and from your office desktop.

users and he is also the interface between vendor, user, and IT services ensuring that your animal data will be there when you need it.

The tasks for our veterinary services are constantly changing and also growing. Please do not hesitate to contact us if we can be of help or support.

Caroline Johner, Michael Wiedemann and Bettina Oswald

Dissertationen

Seit dem 23. November 2015 darf sich **Lena Wyss** von der Forschungsgruppe Transplantation Immunology (Departement Biomedizin Hebelstrasse) Frau Dr. nennen. Sie befasste sich in ihrer Doktorarbeit mit dem Thema: "The role of self-reactivity in regulatory T cell development and acquisition of diverse regulatory activities".

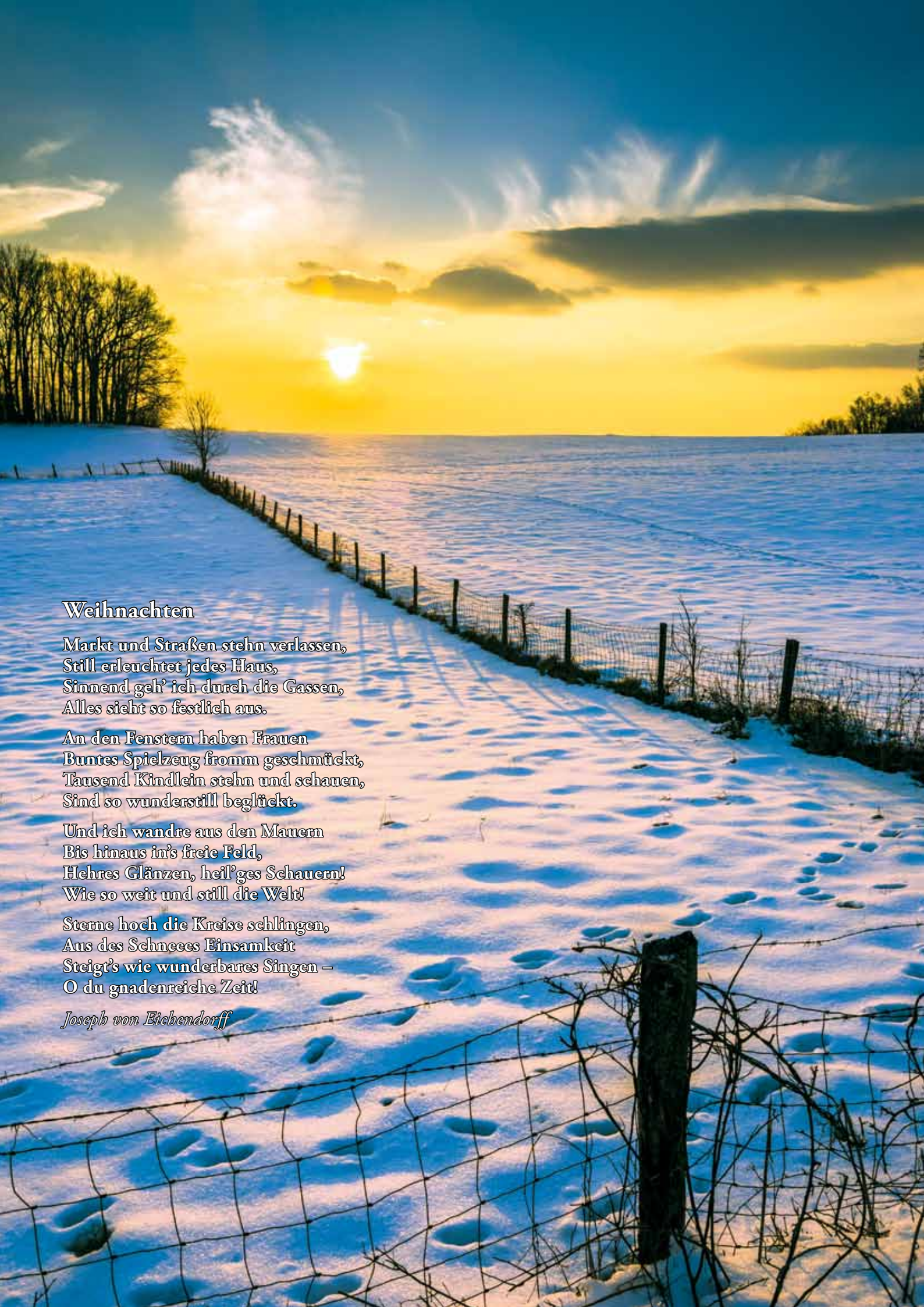
Am 26. November 2015 konnte **Sophia Thanei** von der Forschungsgruppe Clinical Immunology (Departement Biomedizin Hebelstrasse) ihre Dissertation mit Erfolg beenden. Sie widmete sich in ihrer Doktorarbeit dem Thema "Functional consequences of anti-C1q autoantibodies from systemic lupus erythematosus patients".

Auszeichnungen

ESOT Travel Award an Céline Leboeuf

Céline Leboeuf von der Forschungsgruppe "Transplantation & Clinical Virology" (Departement Biomedizin Petersplatz) hat bei der 20. NAT Conference den ESOT Travel Award gewonnen, für den besten Abstract und die beste Oral Presentation: Characterization of BK Polyomavirus (BKPyV), Human Leukocyte Antigen (HLA) class I-restricted, CD8 T-cell responses in healthy individuals and pediatric kidney transplant recipients.

Das DBM gratuliert ganz herzlich!



Weihnachten

Markt und Straßen stehn verlassen,
Still erleuchtet jedes Haus,
Sinnend geh' ich durch die Gassen,
Alles sieht so festlich aus.

An den Fenstern haben Frauen
Buntes Spielzeug fromm geschmückt,
Tausend Kindlein stehn und schauen,
Sind so wunderstill beglückt.

Und ich wandre aus den Mauern
Bis hinaus in's freie Feld,
Hehres Glänzen, heil'ges Schauern!
Wie so weit und still die Welt!

Sterne hoch die Kreise schlingen,
Aus des Schneees Einsamkeit
Steigt's wie wunderbares Singen –
O du gnadenreiche Zeit!

Joseph von Eichendorff

Basic and translational research BMJ 2015;74:260–266 IF 10,377

FGF2 induces RANKL gene expression as well as IL1β regulated MHC class II in human bone marrow-derived mesenchymal progenitor stromal cells

Chiara Bocelli-Tyndall[1,2], Emanuele Trella[1], Audrey Frachet[3], Paul Zajac[1], Dennis Pfaff[3], Jeroen Geurts[4], Stefan Heiler[1,5], Andrea Barbero[1], Marcus Mumme[1], Therese J Resink[3], Stefan Schaeren[1], Giulio C Spagnoli[1], Alan Tyndall[2]

Abstract

Objective Human bone marrow mesenchymal stromal cells (hBM-MSC) are being applied in tissue regeneration and treatment of autoimmune diseases (AD). Their cellular and immunophenotype depend on isolation and culture conditions which may influence their therapeutic application and reflect their in vivo biological functions. We have further characterised the phenotype induced by fibroblast growth factor 2 (FGF2) on healthy donor hBM-MSC focusing on the osteoimmunological markers osteoprotegerin (OPG), receptor activator of nuclear factor kB (RANK), RANK ligand (RANKL) and HLA-DR and their regulation of expression by the inflammatory cytokines IL1β and IFNγ.

Methods RANK, RANKL, OPG and HLA-DR expression in hBM-MSC expanded under specific culture conditions, were measured by RT-PCR and flow cytometry. MAPKs induction by FGF2, IL1β and IFNγ in hBM-MSC was analysed by immunoblotting and RT-PCR.

Results In hBM-MSC, OPG expression is constitutive and FGF2 independent. RANKL expression depends on FGF2 and ERK1/2 activation. IL1β and IFNγ activate ERK1/2 but fail to induce RANKL. Only IL1β induces P38MAPK. The previously described HLA-DR induced by FGF2 through ERK1/2 on hBM-MSC, is suppressed by IL1β through inhibition of CIITA transcription. HLA-DR induced by IFNγ is not affected by IL1β in hBM-MSC, but is suppressed in articular chondrocytes and lung fibroblasts.

Conclusions RANKL expression and IL1β regulated MHC-class II, both induced via activation of the ERK1/2 signalling pathway, are specific for progenitor hBM-MSC expanded in the presence of FGF2. HLA-DR regulated by IL1β and ERK1/2 is observed on hBM-MSC during early expansion without FGF2 suggesting previous in vivo acquisition. Stromal progenitor cells with this phenotype could have an osteoimmunological role during bone regeneration.

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SrGAP2-Dependent Integration of Membrane Geometry and Slit-Robo-Repulsive Cues Regulates Fibroblast Contact Inhibition of Locomotion

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Summary

Migrating fibroblasts undergo contact inhibition of locomotion (CIL), a process that was discovered five decades ago and still is not fully understood at the molecular level. We identify the Slit2-Robo4-srGAP2 signaling network as a key regulator of CIL in fibroblasts. CIL involves highly dynamic contact protrusions with a specialized actin cytoskeleton that stochastically explore cell-cell overlaps between colliding fibroblasts. A membrane curvature-sensing F-BAR domain pre-localizes srGAP2 to protruding edges and terminates their extension phase in response to cell collision. A FRET-based biosensor reveals that Rac1 activity is focused in a band at the tip of contact protrusions, in contrast to the broad activation gradient in contact-free protrusions. SrGAP2 specifically controls the duration of Rac1 activity in contact protrusions, but not in contact-free protrusions. We propose that srGAP2 integrates cell edge curvature and Slit-Robo-mediated repulsive cues to fine-tune Rac1 activation dynamics in contact protrusions to spatiotemporally coordinate CIL.

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Acute Effects of Lysergic Acid Diethylamide in Healthy Subjects

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Abstract

Background: After no research in humans for >40 years, there is renewed interest in using lysergic acid diethylamide (LSD) in clinical psychiatric research and practice. There are no modern studies on the subjective and autonomic effects of LSD, and its endocrine effects are unknown. In animals, LSD disrupts prepulse inhibition (PPI) of the acoustic startle response, and patients with schizophrenia exhibit similar impairments in PPI. However, no data are available on the effects of LSD on PPI in humans.

Methods: In a double-blind, randomized, placebo-controlled, crossover study, LSD (200 μg) and placebo were administered to 16 healthy subjects (8 women, 8 men). Outcome measures included psychometric scales; investigator ratings; PPI of the acoustic startle response; and autonomic, endocrine, and adverse effects.

Results: Administration of LSD to healthy subjects produced pronounced alterations in waking consciousness that lasted 12 hours. The predominant effects induced by LSD included visual hallucinations, audiovisual synesthesia, and positively experienced derealization and depersonalization phenomena. Subjective well-being, happiness, closeness to others, openness, and trust were increased by LSD. Compared with placebo, LSD decreased PPI. LSD significantly increased blood pressure, heart rate, body temperature, pupil size, plasma cortisol, prolactin, oxytocin, and epinephrine. Adverse effects produced by LSD completely subsided within 72 hours. No severe acute adverse effects were observed.

Conclusions: In addition to marked hallucinogenic effects, LSD exerts methylenedioxymethamphetamine-like empathogenic mood effects that may be useful in psychotherapy. LSD altered sensorimotor gating in a human model of psychosis, supporting the use of LSD in translational psychiatric research. In a controlled clinical setting, LSD can be used safely, but it produces significant sympathomimetic stimulation.

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Nintedanib Is a Highly Effective Therapeutic for Neuroendocrine Carcinoma of the Pancreas (PNET) in the Rip1Tag2 Transgenic Mouse Model

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Abstract

Purpose: Pancreatic neuroendocrine tumors (PNET) represent a rare but challenging heterogeneous group of cancers with an increasing incidence over the last number of decades. Herein, we report an in-depth evaluation of the new antiangiogenic smallmolecule tyrosine kinase inhibitor (TKI) nintedanib in the preclinical Rip1Tag2 transgenic mouse model of neuroendocrine carcinoma of the pancreas (insulinoma).

Experimental Design: We have assessed the antiangiogenic and antitumor activity of nintedanib, in comparison with other antiangiogenic TKI, by treating Rip1Tag2 transgenic mice with different treatment schedules complemented with histopathologic, cell biologic, and biochemical analyses.

Results: Prolonged nintedanib treatment of Rip1Tag2 mice has led to a strong suppression of angiogenesis, accompanied by a reduced tumor burden, which translated into a significant prolongation of survival. Despite nintedanib's inhibitory action on perivascular cells, the blood vessels remaining after therapy displayed a considerably mature phenotype with tight perivascular cell coverage and preserved perfusion. Nintedanib treatment did not increase local tumor invasiveness or metastasis to the liver and pancreatic lymph nodes—a phenomenon that has been observed with antiangiogenic treatments of Rip1Tag2 transgenic mice in other laboratories. In contrast with the strong reduction in blood microvessel densities, nintedanib did not have any impact on tumor lymphangiogenesis.

Conclusions: Based on our findings, we propose the clinical evaluation of the antiangiogenic drug nintedanib as a new treatment modality for PNET patients, notably in a direct comparison with already established therapeutic regimens, such as sunitinib.

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VEGF dose regulates vascular stabilization through Semaphorin3A and the Neuropilin-1$^+$ monocyte/ TGF-β1 paracrine axis

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Abstract

VEGF is widely investigated for therapeutic angiogenesis, but while short-term delivery is desirable for safety, it is insufficient for new vessel persistence, jeopardizing efficacy. Here, we investigated whether and how VEGF dose regulates nascent vessel stabilization, to identify novel therapeutic targets. Monoclonal populations of transduced myoblasts were used to homogeneously express specific VEGF doses in SCID mouse muscles. VEGF was abrogated after 10 and 17 days by Aflibercept treatment. Vascular stabilization was fastest with low VEGF, but delayed or prevented by higher doses, without affecting pericyte coverage. Rather, VEGF dose-dependently inhibited endothelial Semaphorin3A expression, thereby impairing recruitment of Neuropilin-1-expressing monocytes (NEM), TGF-β1 production and endothelial SMAD2/3 activation. TGF-β1 further initiated a feedback loop stimulating endothelial Semaphorin3A expression, thereby amplifying the stabilizing signals. Blocking experiments showed that NEM recruitment required endogenous Semaphorin3A and that TGF-β1 was necessary to start the Semaphorin3A/NEM axis. Conversely, Semaphorin3A treatment promoted NEM recruitment and vessel stabilization despite high VEGF doses or transient adenoviral delivery. Therefore, VEGF inhibits the endothelial Semaphorin3A/NEM/TGF-β1 paracrine axis and Semaphorin3A treatment accelerates stabilization of VEGF-induced angiogenesis.

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Immune Reconstitution After Allogeneic Hematopoietic Stem Cell Transplantation and Association With Occurrence and Outcome of Invasive Aspergillosis

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Background. Invasive aspergillosis (IA) remains a leading cause of morbidity and mortality in patients receiving allogeneic hematopoietic stem cell transplantation (HSCT). To date, no reliable immunological biomarkers for management and outcome of IA exist. Here, we investigated reconstitution of antifungal immunity in patients during the first 12 months after HSCT and correlated it with IA.

Methods. Fifty-one patients were included, 9 with probable/proven IA. We determined quantitative and qualitative reconstitution of polymorphonuclear (PMN), CD4, CD8, and natural killer (NK) cells against *Aspergillus fumigatus* over 5 time points and compared the values to healthy donors.

Results. Absolute CD4 and CD8 cell counts, antigen-specific T-cell responses, and killing capacity of PMN against A. fumigatus were significantly decreased in all patients over 12 months. In patients with probable/proven IA, reactive oxygen species (ROS) production tended to be lower compared to patients without IA, and absolute NK-cell counts remained below 200 cells/μL. Patients with well-controlled IA showed significantly higher ROS production and NK-cell counts compared to patients with poor outcome.

Conclusions. This study highlights the importance of functional PMN, T-cell, and NK-cell immunity for the outcome of IA. Larger multicenter studies should address the potential use of NK-cell counts for the management of antifungal therapy.

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Facile Fabrication of Egg White Macroporous Sponges for Tissue Regeneration

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The availability of 3D sponges combining proper biochemical, biophysical, and biomechanical properties with enhanced capacity of in vivo engraftment and vascularization is crucial in regenerative medicine. A simple process is developed to generate macroporous scaffolds with a well-defined architecture of interconnected pores from chicken egg white (EW), a material with protein- and growth factor-binding features which has not yet been employed in regenerative medicine. The physicomechanical properties and degradation rates of the scaffold are finely tuned by using varying concentrations of the cross-linker, 1-ethyl-3-(3-dimethylaminopropyl) carbodiimide hydrochloride, without alteration of the biochemical traits. In vitro, EW scaffolds supported active metabolism, proliferation, and migration of human dermal fibroblasts, thereby generating uniform cellular constructs. In vivo, subcutaneous implantation in mice reveals negligible immune reaction and efficient cell and tissue ingrowth. Angiogenesis into EW scaffolds is enhanced as compared to standard collagen type I sponges used as reference material, likely due to significantly higher adsorption of the proangiogenic factor vascular endothelial growth factor. In summary, a material is presented derived by facile processing of a highly abundant natural product. Due to the effi cient subcutaneous engraftment capacity, the sponges can find utilization for soft tissue regeneration.

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Genetic characterization and improved genotyping of the dysferlin-deficient mouse strain *Dysf*^{tm1Kcam}

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Abstract

Background: Mouse models of dysferlinopathies are valuable tools with which to investigate the pathomechanisms underlying these diseases and to test novel therapeutic strategies. One such mouse model is the *Dysf*^{tm1Kcam} strain, which was generated using a targeting vector to replace a 12-kb region of the dysferlin gene and which features a progressive muscular dystrophy. A prerequisite for successful animal studies using genetic mouse models is an accurate genotyping protocol. Unfortunately, the lack of robustness of currently available genotyping protocols for the *Dysf*^{tm1Kcam} mouse has prevented efficient colony management. Initial attempts to improve the genotyping protocol based on the published genomic structure failed. These difficulties led us to analyze the targeted locus of the dysferlin gene of the *Dysf*^{tm1Kcam} mouse in greater detail.

Methods: In this study we resequenced and analyzed the targeted locus of the *Dysf*^{tm1Kcam} mouse and developed a novel PCR protocol for genotyping.

Results: We found that instead of a deletion, the dysferlin locus in the *Dysf*^{tm1Kcam} mouse carries a targeted insertion. This genetic characterization enabled us to establish a reliable method for genotyping of the *Dysf*^{tm1Kcam} mouse, and thus has made efficient colony management possible.

Conclusion: Our work will make the *Dysf*^{tm1Kcam} mouse model more attractive for animal studies of dysferlinopathies.

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Receptor interaction profiles of novel *N*-2-methoxybenzyl (NBOMe) derivatives of 2,5-dimethoxy-substituted phenethylamines (2C drugs)

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Abstract

Background: N-2-methoxybenzyl-phenethylamines (NBOMe drugs) are newly used psychoactive substances with poorly defined pharmacological properties. The aim of the present study was to characterize the receptor binding profiles of a series of NBOMe drugs compared with their 2,5-dimethoxy-phenethylamine analogs (2C drugs) and lysergic acid diethylamide (LSD) *in vitro*.

Methods: We investigated the binding affinities of 2C drugs (2C-B, 2C-C, 2C-D, 2C-E, 2C-H, 2C-I, 2C-N, 2C-P, 2C-T-2, 2C-T-4, 2C-T-7, and mescaline), their NBOMe analogs, and LSD at monoamine receptors and determined functional 5-hydroxytryptamine-2A (5-HT_{2A}) and 5-HT_{2B} receptor activation. Binding at and the inhibition of monoamine uptake transporters were also determined. Human cells that were transfected with the respective human receptors or transporters were used (with the exception of trace amine-associated receptor-1 [$TAAR_1$], in which rat/mouse receptors were used).

Results: All of the compounds potently interacted with serotonergic $5\text{-HT}_{2A,}$ $5\text{-HT}_{2B,}$ 5-HT2C receptors and rat $TAAR_1$ (most Ki and EC_{50}: <1 μM). The *N*-2-methoxybenzyl substitution of 2C drugs increased the binding affinity at serotonergic 5-HT_{2A}, 5-HT_{2C}, adrenergic α_1, dopaminergic $D_{1\text{-}3}$, and histaminergic H_1 receptors and monoamine transporters but reduced binding to 5-HT_{1A} receptors and $TAAR_1$. As a result, NBOMe drugs were very potent 5-HT_{2A} receptor agonists (EC_{50}: 0.04–0.5 μM) with high $5\text{-HT}_{2A}/5\text{-HT}_{1A}$ selectivity and affinity for adrenergic α_1 receptors (K_i: 0.3–0.9 μM) and $TAAR_1$ (K_i: 0.06–2.2 μM), similar to LSD, but not dopaminergic $D_{1–3}$ receptors (most K_i: > 1 μM), unlike LSD.

Conclusion: The binding profile of NBOMe drugs predicts strong hallucinogenic effects, similar to LSD, but possibly more stimulant properties because of α1 receptor interactions.

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The Nucleoprotein Is Required for Lymphocytic Choriomeningitis Virus-Based Vaccine Vector Immunogenicity

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Recombinant glycoprotein-deficient lymphocytic choriomeningitis virus-based vaccine vectors (rLCMV/△GP) are potent $CD8^+$ T cell inducers. To investigate the underlying molecular requirements, we generated a nucleoprotein-deficient vector counterpart (rLCMV/△NP). NP but not GP is a minimal *trans*-acting factor for viral transcription and genome replication. We found that, unlike rLCMV/△GP, rLCMV/△NP failed to elicit detectable $CD8^+$ T cell responses unless NP was *trans* complemented in a transgenic host. Hence, NP-dependent intracellular gene expression is essential for LCMV vector immunogenicity.

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Contractile function and energy metabolism of skeletal muscle in rats with secondary carnitine deficiency

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The consequences of carnitine depletion upon metabolic and contractile characteristics of skeletal muscle remain largely unexplored. Therefore, we investigated the effect of *N*-trimethyl-hydrazine-3-propionate (THP) administration, a carnitine analog inhibiting carnitine biosynthesis and renal reabsorption of carnitine, on skeletal muscle function and energy metabolism. Male Sprague-Dawley rats were fed a standard rat chow in the absence (CON; $n = 8$) or presence of THP ($n = 8$) for 3 wk. Following treatment, rats were fasted for 24 h prior to excision of their soleus and EDL muscles for biochemical characterization at rest and following 5 min of contraction in vitro. THP treatment reduced the carnitine pool by ~80% in both soleus and EDL muscles compared with CON. Carnitine depletion was associated with a 30% decrease soleus muscle weight, whereas contractile function (expressed per gram of muscle), free coenzyme A, and water content remained unaltered from CON. Muscle fiber distribution and fiber area remained unaffected, whereas markers of apoptosis were increased in soleus muscle of THP-treated rats. In EDL muscle, carnitine depletion was associated with reduced free coenzyme A availability (-25%, $P < 0.05$), impaired peak tension development (-44%, $P < 0.05$), and increased glycogen hydrolysis (52%, $P < 0.05$) during muscle contraction, whereas PDC activation, muscle weight, and water content remained unaltered from CON. In conclusion, myopathy associated with carnitine deficiency can have different causes. Although muscle atrophy, most likely due to increased apoptosis, is predominant in muscle composed predominantly of type I fibers (soleus), disturbance of energy metabolism appears to be the major cause in muscle composed of type II fibers (EDL).

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Large-scale manufacturing of GMP-compliant anti-EGFR targeted nanocarriers: Production of doxorubicin-loaded anti-EGFR -immunoliposomes for a first-in-man clinical trial

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Abstract

We describe the large-scale, GMP-compliant production process of doxorubicin-loaded and anti-EGFR-coated immunoliposomes (anti-EGFR-ILs-dox) used in a first-in-man, dose escalation clinical trial. 10 batches of this nanoparticle have been produced in clean room facilities. Stability data from the pre-GMP and the GMP batch indicate that the anti-EGFR-ILs-dox nanoparticle was stable for at least 18 months after release. Release criteria included visual inspection, sterility testing, as well as measurements of pH (pH 5.0–7.0), doxorubicin HCl concentration (0.45–0.55 mg/ml), endotoxin concentration (<1.21 IU/ml), leakage (<10%), particle size (Z-average of Caelyx ± 20 nm), and particle uptake (uptake absolute: >0.50 ng doxorubicin/mg protein; uptake relatively to PLD: >5 fold). All batches fulfilled the defined release criteria, indicating a high reproducibility as well as batch-to-batch uniformity of the main physico-chemical features of the nanoparticles in the setting of the large-scale GMP process. In the clinical trial, 29 patients were treated with this nanoparticle between 2007 and 2010. Pharmacokinetic data of anti-EGFR-ILs-dox collected during the clinical study revealed stability of the nanocarrier in vivo. Thus, reliable and GMP-compliant production of anti-EGFR-targeted nanoparticles for clinical application is feasible.

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Impaired mitochondrial function in HepG2 cells treated with hydroxy-cobalamin[c-lactam]: A cell model for idiosyncratic toxicity

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Abstract

The vitamin B12 analog hydroxy-cobalamin[c-lactam] (HCCL) impairs mitochondrial protein synthesis and the function of the electron transport chain. Our goal was to establish an in vitro model for mitochondrial dysfunction in human hepatoma cells (HepG2), which can be used to investigate hepatotoxicity of idiosyncratic mitochondrial toxicants.

For that, HepG2 cells were treated with HCCL, which inhibits the function of methylmalonyl-CoA mutase and impairs mitochondrial protein synthesis. Secondary, cells were incubated with propionate that served as source of propionyl-CoA, a percursor of methylmalonyl-CoA. Dose-finding experiments were conducted to evaluate the optimal dose and treatment time of HCCL and propionate for experiments on mitochondrial function.

50 μM HCCL was cytotoxic after exposure of HepG2 cells for 2 d and 10 and 50 μM HCCL enhanced thecytotoxicity of 100 or 1000 μM propionate. Co-treatment with HCCL (10 μM) and propionate (1000 μM)dissipated the mitochondrial membrane potential and impaired the activity of enzyme complex IV of the electron transport chain. Treatment with HCCL decreased the mRNA content of mitochondrially encoded proteins, whereas the mtDNA content remained unchanged. We observed mitochondrial ROS accumulation and decreased mitochondrial SOD2 expression. Moreover, electron microscopy showed mitochondrial swelling. Finally, HepG2 cells pretreated with a non-cytotoxic combination of HCCL (10 μM) and propionate (100 μM) were more sensitive to the mitochondrial toxicants dronedarone, benzbromarone, and ketoconazole than untreated cells.

In conclusion, we established and characterized a cell model, which could be used for testing drugs with idiosyncratic mitochondrial toxicity.

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T cells specific for different latent and lytic viral proteins efficiently control Epstein-Barr virus–transformed B cells

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Abstract

Background aims. Epstein-Barr virus (EBV)-associated post-transplant lymphoproliferative disorders (PTLD) belong to the most dreaded complications of immunosuppression. The efficacy of EBV-specific T-cell transfer for PTLD has been previously shown, yet the optimal choice of EBV-derived antigens inducing polyclonal $CD4^+$ and $CD8^+$ T cells that cover a wide range of human leukocyte antigen types and efficiently control PTLD remains unclear.

Methods. A pool of 125 T-cell epitopes from seven latent and nine lytic EBV-derived proteins (EBV_{mix}) and peptide pools of EBNA1, EBNA3c, LMP2a and BZLF1 were used to determine T-cell frequencies and to isolate T cells through the use of the interferon (IFN)-γ cytokine capture system. We further evaluated the phenotype and functionality of the generated T-cell lines *in vitro*.

Results. EBV_{mix} induced significantly higher T-cell frequencies and allowed selecting more $CD4^+$ IFN-γ^+ and $CD8^+$ IFN-γ^+ cells than single peptide pools. T cells of all specificities expanded similarly *in vitro*, recognized cognate antigen, and, to a lower extent, EBV-infected cells, exerted moderate cytotoxicity and showed reduced alloreactivity. However, EBV_{mix}-specific cells most efficiently controlled EBV-infected lymphoblastoid cell lines (LCLs). This control was mainly mediated by EBV-specific $CD8^+$ cells with an oligoclonal epitope signature covering both latent and lytic viral proteins. Notably, EBV-specific $CD4^+$ cells unable to control LCLs produced significantly less perforin and granzyme B, probably because of limited LCL epitope presentation.

Conclusions. EBV_{mix} induces a broader T-cell response, probably because of its coverage of latent and lytic EBV-derived proteins that may be important to control EBV-transformed B cells and might offer an improvement of T-cell therapies.

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Diagnostic performance of near-patient testing for influenza

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Abstract

Background: Rapid diagnosis of influenza is important for controlling outbreaks and starting antiviral therapy. Direct antigen detection (DAD) is rapid, but lacks sensitivity, whereas nucleic acid amplification testing (NAT) is more sensitive, but also more time-consuming.

Objectives: To evaluate the performance of a rapid isothermal NAT and two DADs.

Study design: During February–May 2014, we tested 211 consecutive patients with influenza-like illness using a commercial isothermal NAT (Alere™ Influenza A&B) as well as the DAD Sofia® Influenza A + B and BinaxNOW® Influenza A&B for detection of influenza-A and -B virus. RespiFinder-22® a commercial multiplex NAT served as reference test. Serial 10-fold dilutions of influenza-A and -B cell culture supernatants were examined. Another 225 patient samples were tested during December 2014–February 2015.

Results: Compared to RespiFinder-22®, the isothermal NAT Alere™ Influenza A&B, and the DAD Sofia® Influenza A + B and BinaxNOW® Influenza A&B had sensitivities of 77.8%, 59.3% and 29.6%, and specificities of 99.5%, 98.9% and 100%, respectively, for the first 211 patient samples. Alere™ Influenza A&B showed 85.7% sensitivity and 100% specificity in the second cohort. Isothermal NAT was 10-100-fold more sensitive compared to DAD for influenza virus culture supernatants with a lower limit of detection of 5000–50,000 copies/mL. The average turn-around time (TAT) of isothermal NAT and DADs was 15 min, but increased to 110 min for Alere™ Influenza A&B, 30 min for BinaxNOW® Influenza A&B, and 45 min for Sofia® Influenza A + B, when analyzing batches of 6 samples.

Conclusion: Simple sample processing and a TAT of 15 min render isothermal NAT Alere™ Influenza A&B suitable for sequential near-patient testing, but the TAT advantage is lost when testing of larger series.

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Optimizing JC and BK polyomavirus IgG testing for seroepidemiology and patient counseling

Piotr Kardas[a], Céline Leboeuf[a], Hans H. Hirsch[a,b,c]

Abstract

Background: Polyomavirus JC (JCPyV) and BK (BKPyV) can cause significant diseases in immunocompromised patients including nephropathy, hemorrhagic cystitis, and leukoencephalopathy.Recently, JCPyV and BKPyV IgG have been explored as risk predictors in multiple sclerosis and transplant patients, but sensitivity, specificity and quantification issues limit current performance.

Objective: To improve JCPyV and BKPyV-specific antibody testing.

Study design: Healthy blood donor sera (N = 400) were tested at dilutions 1:100, 1:200, and 1:400 for JCPyV- and BKPyV-specific IgG using VP1 virus-like particle (VLP)-based ELISAs normalized to a laboratory reference serum. Normalized optical density 492 nm greater or equal 0.1 in all 3 dilutions was regarded as reactive. Sera with discordant reactivity in at least one dilution were retested after VLP preadsorption.

Results: At dilutions 1:100, 1:200, and 1:400, IgG reactivity was 74%, 60% and 53% for JCPyV, and 93%, 86% and 74% for BKPyV, respectively. At these dilutions, JCPyV-VLP preadsorption identified 56, 4 and 0 falsepositives and 0, 4 and 27 false-negatives, respectively. Dilution-dependent sensitivity was 100%, 98%, and 89%, and specificity 65, 98%, and 100%, respectively. For sera diluted 100-, 200-, and 400-fold, BKPyV-VLP preadsorption identified 28, 1 and 0 false-positives, and 0, 0 and 46 false-negatives, and sensitivity was 100%, 100%, 86%, and specificity 50%, 98%, 100%, respectively.

Conclusion: For seroepidemiology studies, normalized JCPyV and BKPyV IgG ELISA at 1:200 serum dilution provides optimal sensitivity and specificity with the lowest false-positive and false-negative rate. For individual risk assessment, dilutions of 100, 200, and 400 combined with preadsorption for low-reactive sera may be most appropriate.

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Brain Plasticity **Brain Plasticity** 1 (2015) 125–137

Running Improves Pattern Separation during Novel Object Recognition

Leoni Bolz*, Stefanie Heigele* and Josef Bischofberger

Abstract. Running increases adult neurogenesis and improves pattern separation in various memory tasks including context fear conditioning or touch-screen based spatial learning. However, it is unknown whether pattern separation is improved in spontaneous behavior, not emotionally biased by positive or negative reinforcement. Here we investigated the effect of voluntary running on pattern separation during novel object recognition in mice using relatively similar or substantially different objects.We show that running increases hippocampal neurogenesis but does not affect object recognition memory with 1.5 h delay after sample phase. By contrast, at 24 h delay, running significantly improves recognition memory for similar objects, whereas highly different objects can be distinguished by both, running and sedentary mice. These data show that physical exercise improves pattern separation, independent of negative or positive reinforcement. In sedentary mice there is a pronounced temporal gradient for remembering object details. In running mice, however, increased neurogenesis improves hippocampal coding and temporally preserves distinction of novel objects from familiar ones.

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Selected publications by DBM members

Above you can find the abstracts of recent articles published by members of the DBM. The abstracts are grouped according to the impact factor of the journal where the work appeared. To be included, the papers must meet the following criteria:

1. The first author, last author or corresponding author (at least one of them) is a member of the DBM.
2. Department of Biomedicine and University of Basel affiliation must be mentioned in authors list as published by the journal.
3. The final version of the article must be available (online pre-publications will be included when the correct volume, page numbers etc. becomes available).

We are focussing on original publications. Due to page constraints, abstracts of publications that appeared in lower ranked journals may not be able to be included. Review articles are generally not considered, unless they appeared in the very top journals (e.g. Cell, Science, Nature, NEJM, etc.). The final decision concerning inclusion of an abstract will be made by the chair of the Department of Biomedicine.

If you wish that your article will appear in the next issue of DBM Facts please submit a pdf file to the Departmental Assistant, Manuela Bernasconi: manuela.bernasconi@unibas.ch

Deadline for the next issue is February 29, 2016.

Department of Biomedicine Research Day 2016

Thursday, January 21, 08:10 – 13:15 h
Small Lecture Hall, Zentrum für Lehre und Forschung
Hebelstrasse 20, 4031 Basel

Speakers

Andrea Banfi
Lukas Jeker
Matthias Liechti
Luigi Mariani
Anna Marsano
Daniel Pinschewer
Mike Recher
Tania Rinaldi Barkat
Primo Schär

Departement Biomedizin Basel

Courtesy of Frédéric Laurent / Zeller lab

Wüeschter Silvesterklaus

Brauchtum in der Schweiz: Silvesterkläuse

Ein Silvesterklaus oder Silvesterchlaus ist eine maskierte Person, welche den Brauch des Silvesterklausens pflegt. Im Schweizer Kanton Appenzell Ausserrhoden wird auf diese Art die Jahreswende gefeiert.

Die Jahreswende wird zweimal gefeiert, einmal nach dem gregorianischen Kalender am 31. Dezember und einmal nach dem julianischen Kalender am 13. Januar (Alter Silvester). An diesen Tagen ziehen die Silvesterkläuse mit ihren Schellen in Schuppeln (kleine Gruppen) singend und «zauernd» (ein Naturjodel) von Haus zu Haus, um ein gutes Jahr zu wünschen. Falls der 31. Dezember oder der 13. Januar auf einen Sonntag fällt, so wird an dem Sonntag vorangehenden Samstag gefeiert.

Schriftlich wird das Chlausen 1663 erstmals erwähnt: Die kirchliche Behörde wehrte sich gegen das laute Herumlaufen in der Nacht. Im Kanton Appenzell Innerrhoden wurde das Chlausen laut dem Mandantenbuch von 1776 bis 1808 mit fünf Talern Busse bestraft, was dazu führte, dass der Brauch nur im Kanton Appenzell Ausserrhoden erhalten blieb. Dennoch wurde das Chlausen auch in Innerrhoden bis um das Jahr 1900 in kleinem Rahmen mehr oder weniger «versteckt» oder von der lokalen Bezirksobrigkeit «stillschweigend toleriert» gepflegt.

Dies geschah zu jener Zeit vor allem in den grenznahen Gebieten zu Appenzell-Ausserrhoden, beispielsweise in Haslen, das von drei Seiten von den Ausserrhoder Gemeinden Hundwil, Stein, Teufen und Bühler umringt ist oder in Gonten im Grenzgebiet zu Urnäsch und Hundwil. Auch waren früher teilweise gemischte Schuppel mit Innerrhoder- und Ausserrhoder-Chläusen (was auch heute noch gelegentlich vorkommt) und Einzel-Chläuse unterwegs.

Heute wird davon ausgegangen, dass das Chlausen keinen heidnischen Ursprung hat, sondern auf einen spätmittelalterlichen Brauch der Klosterschüler zurückgeht. Im 15. Jahrhundert soll das adventliche Treiben immer wilder und fasnächtlicher geworden sein, was der Kirche nicht passte. Möglicherweise wurde das Chlausen deshalb von der Adventszeit auf den Silvester verlegt.

Aufgrund ihres äusseren Erscheinungsbildes werden drei verschiedene Typen von Silvesterchläusen unterschieden; die Schöne (Schönen), die Schö-Wüeschte (Schön-Hässlichen) und die Wüeschte (Hässlichen).

Die Schöne haben kunstvoll und reich verzierte Kopfbedeckungen mit Szenen aus dem bäuerlichen Alltag, dem heimischen Brauchtum, dem Handwerk, spezielle Bauten, Sport, oder dem Familienleben, die in liebevoller Handarbeit in hunderten von Freizeitstunden angefertigt werden. Sie tragen einer Tracht ähnliche Kleidung. Die Schö-Wüeschte haben eine Kostümierung aus Tannenreisig, Moos und anderen Naturmaterialien und Kopfbedeckungen, die eine ähnliche Form derer der Schöne gleicht, aber mit Naturmaterialien verziert ist. Die Wüeschte tragen ein Kostüm aus den gleichen Materialien wie die Schö-Wüeschte, jedoch sind diese Kostüme viel grober und wuchtiger in ihrem

Aussehen. Auf dem Kopf befindet sich bei den Wüeschte ein schön gearbeiteter Hut oder ein Helm, der ein wildes Erscheinen hat.

Bei allen Silvesterchläusen sind die Gesichter hinter einer Larve (Maske) verborgen, die entweder lieblich und puppengesichtig (Schöne), fein mit Naturmaterialien beklebt (Schö-Wüescht), oder furchterregend aussehen (Wüeschte). Der Nachwuchs, die Goofe-Schuppel, sind in der Regel ohne Larve unterwegs.

Als «vierte Variante» existieren noch die unterdessen selten gewordenen «Spasschläuse». Es handelt sich dabei um eine etwas freiere Form des Chlausens. Sie sind meist einfacher gewandet und stellen Berufsleute dar (beispielsweise Bauern, Waldarbeiter oder Köche). Sie sind meist auch in kleineren Schuppeln von nur 4 Mann unterwegs. Auch tragen sie keine Hauben, sondern nur Larven, Kopftücher oder schwarze Zipfelmützen. Dabei handelt es sich um ehemalige Silvesterchläuse oder traditionsverbundene Sänger und Jodler, die dieses Brauchtum in reduziertem Umfang auf diese Art weiterpflegen wollen, ohne jedoch den grossen Zeitaufwand für die Herstellung von sehr detailgetreuen «Groscht und Hauben» in Art und Weise der «Schöne Chläuse» investieren zu müssen.

Alle Masken stellen Mannevölcher (Männer) und Wiiber (Frauen) dar, wegen der schweren Kostüme und Schellen stecken aber nur Männer hinter den Masken.

Ein Schuppel besteht aus sechs Silvesterchläusen: Zwei Silvesterchläuse tragen Frauenkleidung und tragen mehrere Rollen (Schellen) und werden Rollewiiber oder Rolli genannt. Der Silvesterklaus, der den Schuppel anführt, wird Vorrolli genannt und hat eine weisse Blume im Mund, der Nachrolli heisst Noerolli, er hat eine blaue Blume im Mund. Diejenigen Silvesterkläuse, die eine oder zwei Schellen auf Brust und Rücken tragen, werden Mannevölcher, Schelli oder Schellenchlaus genannt. Das ganze Kostüm heisst Groscht. Den Rundgang, den jeder Schuppel im Voraus plant, wird Schtrech genannt.

Im gesamten Appenzeller Hinterland, das heisst, in den Gemeinden Urnäsch, Schwellbrunn, Schönengrund, Herisau, Waldstatt, Hundwil und Stein sowie in der Mittelländer Gemeinde Teufen wird das Silvesterchlausen gepflegt. Vereinzelte Schuppel finden sich weiter auch in den Gemeinden Bühler und Speicher. (Quelle: Wikipedia)

The Editorial Team of DBM Facts wishes all its readers a Merry Christmas and a Happy New Year!

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Anatomisches Museum

Und weil es so schön war, alle Jahre wieder:

Nachruf Frau PD Dr. Luminita Göbbel

Mit grosser Betroffenheit und Trauer musste das Team des DBM Pestalozzistrasse am 10. November 2015 von Frau PD Dr. Luminita Göbbel Abschied nehmen.

Kurz vor ihrem 54. Geburtstag hat sie den Kampf gegen den Krebs verloren.

Luminita Göbbel war eine Weltbürgerin. Geboren in Rumänien, wo sie Biologie studierte, vertiefte sie ihre Kenntnisse in Tübingen und in New York, bevor sie sich in Halle/Saale zur Fachanatomin ausbilden liess. 2010 kam sie an die Universität Basel in das Team Makroanatomie von Frau Prof. Müller-Gerbl, wo sie bis zu ihrem Tod beschäftigt war.

Mit grossem Engagement und Freude widmete sie sich ihren Aufgaben in der Forschung und in der Lehre. Sie unterrichtete die Anatomie in Vorlesungen und praktischen Kursen und erfreute sich grosser Beliebtheit bei den Studierenden. Mit ihrer Begabung, die Anatomie auch mit anderen Fächern zu verbinden (z.B. Kunst), schaffte sie es, bei ihnen auch Interesse für andere Gebiete zu wecken und damit über den medizinischen Tellerrand hinauszublicken.

Kleine Kunstwerke entstanden, als Luminita Göbbel im Rahmen von Projekten im Bachelorstudiengang Medizin, neben der Vermittlung von theoretischem Wissen, die Studierenden auch mit verschiedensten Materialien Körperteile oder Organe kreativ darstellen liess. Diese Objekte bleiben im Foyer des Anatomischen Instituts als ihr Vermächtnis ausgestellt.

Ihre erste Krebsdiagnose im Jahr 2012 nahm sie nicht kampflos hin. Sie änderte ihren Lebensstil und es gelang ihr, mit einer positiven Lebenseinstellung einen Etappensieg gegen diese Krankheit davonzutragen. Auch während der Therapie war sie für ihre Studierenden da und hielt am Ausbildungsprogramm fest. Sie entdeckte ihre Begabung und ihr Interesse an der darstellenden Kunst. Die Malerei wurde ihr Mittel, ihren Gefühlen und Ängsten Ausdruck zu verleihen, als sich der Krebs im Frühjahr 2015 zurückmeldete.

Luminita Göbbel war uns eine zuverlässige und liebe Kollegin. Sie wird uns sehr fehlen und wir sind von Herzen dankbar über die Zeit, welche wir zusammen verbringen durften.

Die Mitarbeiterinnen und Mitarbeiter des DBM Pestalozzistrasse (Anatomie)

The English tea time

If you're slaving hard at home or relaxing
Or you're working in a noisy factory
Just set yourself free when the clock strikes three
'Cos everything stops for tea

Once upon a time, this little verse could be heard at 3 pm every weekday on BBC Radio 2. A lovely way to suggest one takes a break! Unfortunately the custom of stopping for tea was already on the decline and I only remember taking "afternoon tea" during visits to my grandparents.

As the British still drink 165 million cups of tea a day we probably deserve to have a reputation for being a nation of tea drinkers. Tea time however is usually more than just drinking a cup of tea and, depending on where in Britain you are, it could be anything from a piece of cake to a few light sandwiches or a full dinner. Did you know there was a difference?

Afternoon tea, cream tea or high tea?
Afternoon tea is a light meal, traditionally served between four and five in the afternoon – logical really! In the 1840s luncheon was usually served at 12 noon while dinner was not until 8 or even 9 pm in the evening. The seventh Duchess of Bedford, apparently complained of a "sinking" feeling in the middle of the afternoon and asked for some tea and a few slices of bread and butter: thus was a tradition born. True or not, the trend for eating in the afternoon became popular and ladies of the upper class would dress in their finest and visit each other's houses to enjoy afternoon tea.

Afternoon tea dresses

Mug of tea

As well as bread and butter, there would be thin sandwiches (cucumber, egg and cress, fish paste, ham and perhaps smoked salmon) with the bread cut into triangles and the crusts removed, as well as scones with cream and jam plus cakes and pastries such as Battenberg, fruit cake or Victoria sponge. The tea, India and/or China, would be served in silver tea pots and poured into fine china cups.

Afternoon tea at the 3 Kings

From our point of view, nineteenth century afternoon teas seem elaborate affairs but in those days they were relatively informal occasions. Invitations were issued verbally or by note, and guests were free to pop in when it suited them and likewise leave whenever they wanted. While the hostess would pour the tea, the men, or if there were no men present, the daughters of the hostess or other young women present would hand the cups round. Manuals on etiquette and good housekeeping were full of advice on how to conduct a correct afternoon tea. There was a fashion for women to wear tea gowns, which were softer and less restrictive than evening gowns, and women did not always have to wear gloves. Nonetheless many did, and *The Etiquette of Modern Society* suggested that a thoughtful hostess should always provide biscuits with tea, since these can be eaten more easily than sandwiches without removing one's gloves.

In 1864, the first tea shop for middle class women was opened and soon after such London establishments as Fortnum and Masons, the Ritz and Brown's Hotel opened tea rooms where a lady could meet her friends without needing a chaperone to avoid damaging her reputation. Traditional afternoon tea is still served. At the Ritz for example, you can choose from 16 different blends of tea and it will currently cost you around SFr 75 – and that's without the tip. This style of tea was always intended for the wealthier clientele and the price reflects this! The Ritz's website also mentions that there is still a dress code today: trainers or sportswear are not permitted and gentlemen must wear a jacket and tie to partake of afternoon tea in The Palm Court.

During World War I, food rationing effectively put a stop to afternoon tea at home and the tradition didn't really catch on again. A cup of tea and a biscuit (rich tea or digestive) would be enough if one got a little peckish in the afternoon. To enjoy a full afternoon tea one would visit a hotel.

A cream tea is similar to afternoon tea – just forget the sandwiches, cakes and pastries. The most famous cream tea is probably the Devonshire Cream Tea. Local legend has it that this calorie rich meal of bread, clotted cream and strawberry jam, was given by the monks to the labourers who were rebuilding Tavistock Abbey. As other counties contest this legend, who knows where the cream tea really started? We do know that with time the bread has been replaced by scones and a cream tea (Devonshire or otherwise) – scones (plain or with fruit), butter, cream and jam with a pot of tea - can be obtained fairly easily in the cafe attached to most historic homes and castles and for me is one of the highlights of a holiday in the UK.

In contrast to afternoon tea, High tea is not a rich and magnificent affair as it is sometimes advertised. It is rather the evening meal or dinner of the working class and is usually eaten between 5 and 7 pm. The high is used in the sense of well-advanced (viz. high noon) to indicate that it was taken later in the day than afternoon tea. When most people were working on the land, the workers would come home in the middle of the day for

Rose china cup

their day's main meal: after the industrial revolution however the workers couldn't get home so the main meal was eaten in the late afternoon or early evening and was known as tea time. Of course it would be accompanied by large quantities of tea, usually served with milk and sugar.

I grew up in the Midlands where the 3 meals of the day were known as breakfast, dinner and tea: tea was usually a substantial meal. In the south of England however these same meals were breakfast, lunch and dinner. In both regions, teatime was a meal for children and served in the late afternoon.

A nice cup of tea works wonders for me at any time. I like my tea (black tea, with or without caffeine) with milk, no sugar thank you. Not too strong either. I've tried most of the teas on sale in Basel be they black tea, green tea, white tea, rooibos or herbal but only a cup of English Breakfast – loose leaf tea not a bag - can evoke the warm feelings of my childhood.

Perhaps you've seen folk taking afternoon tea in period costume dramas such as Downton Abbey and thought you'd like to sample Afternoon Tea or Cream Tea? You're in luck and you don't need to travel far.

Tea on a tray

Battenberg

Afternoon tea in Basel and surroundings

The Three Kings: deluxe afternoon tea served daily between 2-4 pm and 4:30 – 6:30 pm, SFr 65 per person.
http://www.lestroisrois.com/Afternoon-Tea.971+M52087573ab0.0.html#c4609

Bürgins Fischerhaus: one Sunday afternoon per month, SFr 60 per person. Alternatively you can have everything delivered to your home: table decoration and/or hire of a butler available as extras.
http://www.afternoontea-basel.ch/index.php?id=54

Mac Tanner English Tearoom, Dornach: Monday – Friday 1.30 pm – 6:30 pm. Afternoon tea SFr 34 per person (must pre-order), Cream tea SFr 14.
http://www.mactanner.ch/

Landhaus Ettenbühl, Bad Bellingen (a garden paradise in the best English tradition): Original classic English teatime (pre-order for optimal presentation and fine bone china) € 19.50 per person, Cream tea € 9.50. Served daily in summer from 3 pm.
https://www.landhaus-ettenbuehl.de/cafe-und-restaurant/original-classic-english-teatime-cream-tea_aid_58.html

Unfortunately I can't give you any recommendations as I've not sampled any of these offerings myself but I'd love to hear what you think.

Hilary Ireland

"How is Christmas celebrated in Alsace?"

Located in the east of France, bordered by Switzerland and Germany, Alsace is divided into two departments: Bas Rhin (67) and Haut Rhin (68). Its population is over 1.6 million and its administrative center is Strasbourg. I live in the Munster Valley (close to Colmar) renowned for its famous Minschterkaas (cheese). Munster can be accessed via the D417 from Colmar. The Munster Valley offers all the aspects of a real country within a country. Indeed, it is characterized and distinguished clearly enough from the rest of Alsace by its alpine aspect that it has earned the nickname "Kleini Schwyz" (Little Switzerland). The Alsatian dialect can be difficult to understand, even by those from the surrounding areas. Christmas festivities in Alsace, in the tradition of our ancestors, maintain the dream among children and adults. The roots of these Christmas parties date back to the early winter solstice ceremonies of our Celtic ancestors. In the Munster Valley, and in Alsace, Christmas begins one month in advance! It all starts around November 25, the day of St. Catherine. The following four weeks then become the theater of popular traditions still alive in Alsace. Indeed, when you live in the countryside walking, fire and legends all prepare you for winter and as the evenings lengthen and nature provides the subtle invitation to slow down we naturally remember our winter traditions. To slow down does not mean to sleep or hibernate as the marmots do when they hibernate for six months, but instead the cold period represents a time to focus on what is happening inside. We focus both within the household and in the dusty recesses of our minds. It is the time for taking stock and for starting new projects. This is the time of Advent, and the first Sunday of Advent traditionally marks the start of the Christmas period. On the first Sunday following November 26th, we light the first candle of the "Advent wreath" (Adventkranz). On the following Sunday, we light the second candle, and so on until Christmas. Made from braided spruce branches, the Advent wreath is decorated with pine cones, with ribbons, cinnamon sticks, slices of lemon or orange, etc... All of the houses, the stores and even the churches will have one, or several, suspended from the ceiling of their main room.

In the same spirit, we sometimes have an Advent Sterne ("Advent Star"), in reference to the star appeared in the sky of Bethle-

hem to herald the birth of Christ. It contains twenty-four small stars of paper, numbered and fixed to each of the six branches of a big golden star made from cardboard. The children remove one small star each day so that only the large golden star remains on Christmas Evening. There is, finally, the tradition of the Advent calendar. This is a cardboard sheet in which windows have been cut, one for each day of Advent. Behind each window there is a small colour image, sometimes a figurine or even a piece of chocolate. When my children were younger, my father had made me a stand with 24 hooks each marked by a small star and every morning the children discovered a gift in a bag hanging from that day's star. On the days we lit the advent candles the gifts were more meaningful. Another custom, my children practice at school during the Advent period is "le jeu de l'ange". Each of them draws the name of a classmate from a hat. They were not to reveal which name they had drawn and the goal was to secretly bring a small gift, which they had made themselves, to the classmate in question. We can clearly see the warm atmosphere that would result from this tradition. Advent really is a wonderful time to reflect and to draw on the sources of love for one's neighbour.

This is also the time when we start making the first Christmas cookies (bredele) and the recipes for these vary considerably from one region to another. There are also many figurative breads, such as gingerbread, representing various saints, especially St. Nicolas (December 6th). This vibrant custom refers to the historical figure of the Bishop of Myra in Asia Minor, who lived in the fourth century AD, and whose relics were brought back in Europe during the Middle Ages. He performed various miracles; he became the patron saint of many, including sailors, but especially schoolchildren for whom he became a giver of gifts.

During this period, we also decorate our house windows with stars and all kinds of cut out decorations that can be found in each and every Christmas market. Christmas markets are traditional in Alsace and they appear at the beginning of Advent. Initially Christmas markets were just in the major cities, but now they have spread to bring their magic throughout the region.

The markets are often animated with living cribs and scenes depicting Christmas legends. The scents of mulled wine and Christmas bredele will welcome you and guide on your search for Christmas tree decorations, and festive crafts of all kinds. The streets and houses of the village are festively decked out in their winter finery; in the heat of the Alsatian houses, decorations and pastries that taste of spices appeal to all of the senses! There are also many church concerts and choral singers at the Christmas markets.

The natural Christmas tree has been an object of veneration since pre-Christian times and the significance of the more modern Christmas tree covered by candles stems from that tradition. Bringing greenery into the home is, moreover, a way to preserve nature as the winter months slow down. The Christ-

mas tree was initially decorated with paper flowers, apples, dates and walnuts, and we had to wait until the eighteenth century until it became adorned with candles.

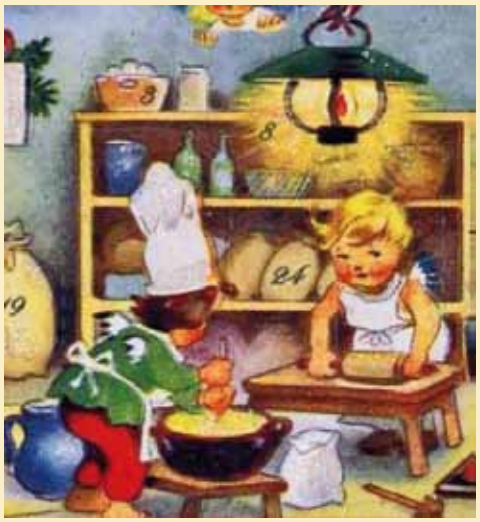
And now let me tell you how French people celebrate Christmas, how we do it at home. In France, we celebrate Christmas on both the 24th (evening) and the 25th (lunchtime) and it is very much a family time. We do not eat out, we celebrate at home. On the 24th, we have dinner together. In many cases, it is only a light meal: the big meal is reserved for the next day, December 25th, to celebrate the true light of Christmas. Some people go to “la messe de Noël” either before dinner or at midnight (“la messe de minuit”). On the 25th, we have lunch will eat until we are not able to eat anymore, usually around 4pm. Presents are opened on the 24th or the 25th (or both), depending on individual family traditions. In my family we open ours on 24th

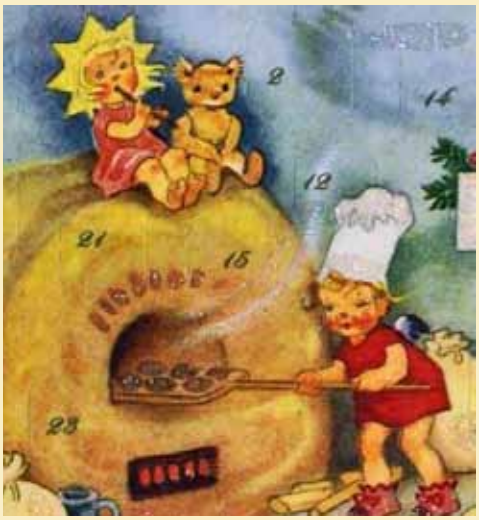
I’m sure you’d like to know what French people eat for Christmas. “En entrée”, the starter, would be something like “foie gras”, salmon, escargots (snails) or sea food (e.g. oysters). “Le plat principal“, the main, is usually “de la dinde” (turkey) “auxmarrons” (with chestnuts). The turkey is “farcie” (stuffed). Finally after “la salade et le fromage” (salad and a cheese plate), we have desert. The king of Christmas deserts is “la bûche de Noël” (the Christmas log)! The “bûche” can be “pâtissière” or “glacée”. “La bûche pâtissière” is like a swiss roll with “génoise” (sponge) and “crème au beurre” (buttercream). “La bûche glacée” is (basically) made of biscuit and ice cream. Both are excellent. I usually buy both and have one on 24th and the other on 25th. It is also at this point that we offer the famous bredele with coffee. In my family we exchange our bredele and the famous Berawecka which is a kind of fruit bread.

Martine Singer

Berawecka (homemade)

Here are the recipes for two of my favorite Christmas cookies:





Florentin:

Melt 55 g butter, with 60 g sugar and 2 coffee spoon of honey over low heat. Remove from heat, add 50 g raisins or candied fruit or orange, 70 g almonds and 50 g flour and mix well.

Cover a baking tray with baking paper and place small heaps of the dough well spaced on the tray.

Cook 10 minutes at 180°C in preheated oven. Cool, and then spread melted dark chocolate generously over the bottom of each Florentine.

Then enjoy!

Nimble fingers:

Mix 250 g flour with a pinch of salt in a bowl. Cut 200 g butter into small pieces and then rub the butter into the flour mix until the mixture resembles breadcrumbs. Add 75g icing sugar, vanilla sugar and 100g peeled almonds and mix to form a dough. Wrap the dough in cling film and allow to rest in a cool place for 30 mins.

To form the dough first shape pieces into finger thick rolls and cut into pieces 2 cm long. Form each piece into a croissant shape and then place on a baking tray lined with baking paper.

Cool for a further 15min before baking. Bake in a preheated oven at 200°C for 10-15 minutes.

Mix together 6 tblsp icing sugar and 1½ packets of vanilla sugar and once the biscuits have been removed from the oven toss them in this sugar mix while still warm taking care not to break them.

Florentin (homemade)

Nimble Finger (homemade)

Januar

Im Januar begehen wir die DBM Research Days und feiern Jürg Schifferli mit einem Abschiedsapéro sowie Primo Schär, der ihn nach seiner Emeritierung als Vizedekan Forschung ablöst …

Februar

im Februar auf die 3 scheenste dääg … hier ein Teil der Kölner Clique …

März

FNSNF
FONDS NATIONAL SUISSE
SCHWEIZERISCHER NATIONALFONDS
FONDO NAZIONALE SVIZZERO
SWISS NATIONAL SCIENCE FOUNDATION

im März freuen wir uns auf positiv bewertete SNF-Anträge und auf den Frühling …

April

im April freuen wir uns mit Nicole Schaeren-Wiemers, dass das «International PhD Program in Biomedicine» vom Rektorat offiziell anerkannt wurde…

Mai

im Mai hält Albert Urwyler seine Abschiedsvorlesung …

Juli

im Juli Christoph Beglinger …

Juni

… dazwischen erhält das DBM im Juni mit bunten Bildern im 2. Stock ein neues Outfit …

DBM Jahre

srückblick

August

im August feiert das DBM sein 15 jähriges Jubiläum mit internationalem Symposium und stimmungsvollem Sommerfest, Thomas Gasser tritt die Nachfolge von Christoph Beglinger als Dekan der Medizinischen Fakultät an …

September

im September ist das DBM mit 12 Ständen an der Uninacht vertreten zur grossen Freude der Bevölkerung …

im Oktober wundern wir uns, wie schnell das Jahr vergangen ist …

November

im November ist klar, wie der Neubau des DBM aussehen soll, das Siegerprojekt wird vorgestellt …

Dezember

im Dezember wird der DBM-Preis für die beste Publikation verliehen … (in der Frühjahrsausgabe mehr) …

Today: Shefaa Al Asfoor, Translational Diabetes

It is my pleasure and an honour to introduce myself to my second family in the Department of Biomedical Science at the University Hospital of Basel. My name is Shefaa AL Asfoor. I am from the kingdom of Bahrain. In Bahrain, names usually have meanings; for instance: My name Shefaa means cure or healing while my family name Al Asfoor means the bird.

In this article I would like to briefly introduce you to Bahrain which perhaps you have heard a little about already or maybe it is the first time that you are meeting a Bahraini citizen or even hearing about this country. Thus, I will try to share some precious and interesting information, scenes, features and portrayals from my beloved Bahrain.

Bahrain

Shefaa, a trip with intermediate school

Geographically, Bahrain is considered one of the Arabian Gulf countries and is situated in the southwest of Asia. It is a small archipelago island consisting of 33 islands, totalling only 760 km2! However, most of Bahrainis, including non-nationals (1,346,613), live on 3 major islands: Bahrain (which is the largest and includes the capital Manama), Sitra and Muharraq. Saudi Arabia the closest neighbour is connected to Bahrain by the King Fahd Causeway (2h by car); you can also easily travel to Dubai or Kuwait (6h by car) and Qatar (15 min by air).

I am pretty sure that most of you are curious to know about the weather there. Winter, the shortest season extending from mid Nov – end of Jan, is probably the best time to barbecue especially near to the shores, while summer, the longest season extending from mid March – End Oct, is the most beautiful time for swimming.

If you ask me about the nature of people there, I will first tell you to wait a second, hold on and remember that the geographical nature of Bahrain is small with simple flat land and no mountains and that this is also reflected in the nature of people and their morals. Thus, I

Duraz shore

am proud to tell you that my people are kind, helpful, generous and non-complicated reflecting their humbled nature.

You might also wonder from which region in Bahrain I come. I am happy to say that I come from a northern coastal village called Diraz. In the past before the discovery of oil, and due to its geographical location, Diraz, and the rest of the coastal villages, were famous for fishing, pearl fishing as well as the sailcloth industry, while the other coastal and non-coastal villages were famous for their agricultural products such as dates (Palm cultivation), green leafy vegetables, tomatoes and melons. Medicinal plants are also grown and people still use such plants for medical purpose.

Safi fish

It is worth mentioning, for people who would really like to know about our traditional foods, that the majority of people love and prefer to eat fish every day (dish: fried fishes and white rice). Safi (rabbitfish) is the most common fish there, Hammour (grouper) is the most expensive fish (Dish: Majbous Hammor – a fish pilaf). Shiery, Janaad, Gogrgfan as well as shrimps are other seasonal fish types. Meat would generally be consumed 1–2 days/week. Chicken dishes are the alternative for people who don't prefer fish. The most typical dishes in Bahrain are Majbous and Biriyani which can be prepared with fish or meat, beef or chicken. Due to historical trade routes most of our spices are origi-

Lund university-Sweden

nally from the Indian kitchen (turmeric, cumin, red pepper, black pepper, black lemon and others). I must also mention, Muharraq island which is famous for its typical yummy desserts such as Halwa, Mattay and rahsh.

Here is a possible interesting medical question that may pop up: what are the most common diseases in Bahrain?

The answer is quick and easy: Diabetes and its complications, sickle cell disease, hypertension and breast cancer are currently the main common types of diseases found in Bahrain. The prevalence of obesity among adults in 2014 stood at 34.1%,a threatening figure!

In addition to being a big fan of medicine and belonging to a diabetic family it was this horrible figure that motivated and inspired me to follow my dream of revealing the secret of this awful, terribly savage and ugly disease. This dream reflects the core meaning of my given name, and it is one I intend to follow.

During high school, I did not know exactly which biological field I would have to choose in order to find my way to break the code of diabetes. However, during my bachelor study (Biology-Chemistry) in the University of Bahrain (2002–2008) I found myself in the immunology and inflammation sector. This brought me, four years later, to a study aimed at exploring the role of mast cells in the pathogenesis of type2 diabetes (T2D) at the Cellular Autoimmunity Unit in Lund University Diabetes Center in Sweden where I as completed my master thesis under the Erasmus Mundus scholarship program (2011–2014). A year later, In 2015 I was awarded a Swiss excellence scholarship for foreign students which allowed me to join the translational diabetes research group in the DPM. This scholarship is a continuation of my journey toward revealing the secret of diabetes specifically by contributing to the process of searching to find a possible drug or a medication that can cure diabetic patients thus helping them to live happily with healthy lives.

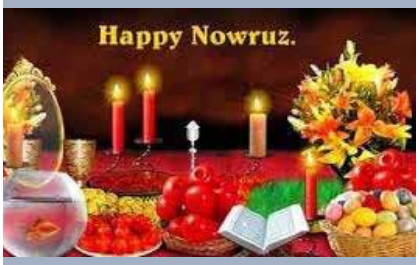
VORSCHAU PREVIEW

In der nächsten Ausgabe . . .

. . . führt uns Ivan Martin in die Geheimnisse des Tissue Engineering ein

. . .zeigt uns Rainer Gosert, wie vielfältig die Dienstleistungen der Mikrobiologie sind

. . . stellt uns Magdalena Müller-Gerbl das Anatomische Museum vor



. . .feiern mit Zeinab Barekati das iranische Neujahrsfest

. . . lernen wir mit Mathias Schmaler seine Heimatstadt Berlin kennen

In der Heiligen Nacht

In der Heiligen Nacht tritt man gern einmal aus der Tür und steht allein unter dem Himmel,
nur um zu spüren, wie still es ist, wie alles den Atem anhält,
um auf das Wunder zu warten.

(Karl-Heinrich Waggerl, 1897-1973)