Collaborate 合作。。。

News from the Joint Laboratory of Neuroscience & Cognition

神经与认知科学联合实验室简报

Joint Laboratory of Neuroscience & Cognition
An Initiative of the Queensland Brain Institute (QBI) and the Institute of Biophysics (IBP)

Issue 3 2013

DIRECTORS' MESSAGES

Professor Perry Bartlett

I had the opportunity to reflect on the achievements of the Joint Laboratory recently, whilst completing the final report for the Queensland State Government National and International Research Alliance Program (NIRAP) funding, the first significant funding awarded to our joint venture. In 3 short years IBP and QBI have built a truly collaborative laboratory of research excellence. The Laboratory continues to expand, both in terms of the number of projects being undertaken and the number of researchers collaborating. Professor Jürgen Götz, who joined QBI in 2012 as the inaugural Director of the Clem Jones Centre for Ageing Dementia Research, has developed a new collaborative project with Professor Rongqiao He on the relationship between tau and formaldehyde in dementia.

I would like to thank Professor He and all our friends and colleagues at IBP for another successful year.

Professor Perry Bartlett, QBI

最近我回顾了神经与认知科学研究实验室所取得的成绩，同时完成了昆士兰州政府联合资助项目(NIRAP)的结题报告，这是我们双方合作获得的第一个意义重大的资助。在短短三年内，生物物理所和昆士兰大学脑研究所之间的合作取得了优异的成绩。令我更为振奋的是，联合实验室不仅在项目数量上不断增加，而且在参与人员的数量上也在不断扩大。Jürgen Götz教授于2012年加入脑研究所，是Clem Jones老年性痴呆研究中心首位负责人，他已和赫荣乔教授开展了新的合作项目，双方正共同研究如何破解在痴呆症中tau蛋白与甲醛的关系。

与此同时，我也非常感谢赫荣乔教授以及我所有生物物理所的朋友同事们，愿我们明年取得更大的收获。

Perry Bartlett教授

主任致辞

Professor Rongqiao He

Welcome to the 2013 edition of *Collaborate*. I am very pleased that a special issue of *Science China Life Sciences* will be published soon. The theme of this issue is "From Brain Function to Therapy", which will interestingly show how the Australia-China Joint Laboratory of Neuroscience and Cognition works collaboratively to understand the mechanisms regulating brain function and disease processes that interfere with function.

I attended the 7th Alzheimer's + Parkinson's Disease Symposium in Queensland, Australia on the 23rd and 24th of September. QBI, under the direction of Professor Bartlett, is excelling in all areas. I believe that our collaboration will obtain many fruitful scientific achievements.

Professor Rongqiao He, IBP

欢迎阅读2013年合作研究简报。我感到非常开心，因为《中国科学－生命科学》专刊很快即将发行。本刊的主题是"从脑功能到疾病防治"，将展示中澳神经与认知科学联合实验室如何理解大脑的调节功能及相关疾病发生发展的脑机制。

我参加了9月23日和24日在澳大利亚昆士兰举行的第七届阿尔茨海默氏综合症及帕金森氏综合症研讨会。与参会代表们交换了关于甲醛作为危险因素造成神经元变性的假设与研究结果。在Perry Bartlett教授的领导下，昆士兰大学脑研究所在各个方面都表现得十分出色。我相信我们的合作将会取得更大的收获。

赫荣乔教授

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UPDATE

Update from the China Liaison Manager

During 2013 I worked with the Bureau of International Cooperation, Chinese Academy of Sciences (CAS), to help arrange the visit by Professor Perry Bartlett and the UQ delegation in March, led by the new Vice-Chancellor Professor Peter Høj. This included the meeting of the delegation of QBI with officers from the Ministry of Science and Technology (MOST) of China to discuss future funding opportunities.

I also worked with Professor Rongqiao He in applying for the CAS Key International Cooperation Project to support the IBP/QBI collaboration. The proposal was approved for funding of 1 million RMB for 3 years.

I helped the communication with CAS and MOST to facilitate the application by IBP and QBI for National Centers/Bases for Key International Joint Research Centers and helped to contact the authors of the Special Issue of *Science China Life Sciences* to facilitate the preparation for the special issue.

I communicated with the Bureau of International Cooperation, CAS, to facilitate the application for the CAS Key International Cooperation Project 2014 between the Institute of Automation, CAS and QBI.

In September I joined Professors Perry Bartlett, Pankaj Sah and Bryan Mowry, and A/Professor Naomi Wray during their visit to IBP. Ongoing research collaborations were discussed.

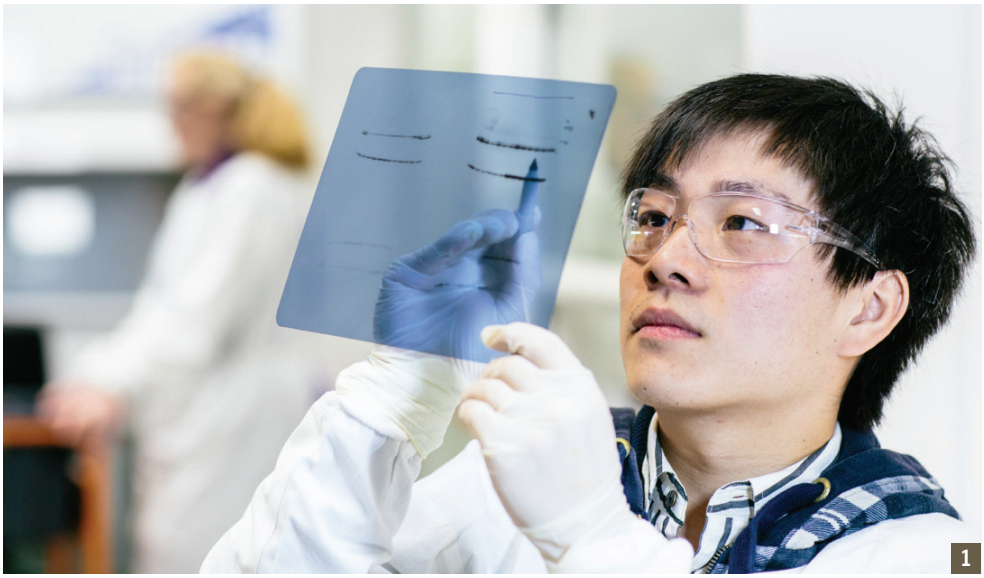
I am looking forward to assisting further in 2014, to ensure the continued success of these exciting collaborations.

Associate Professor Yajing (Maggie) Sun

中国联络经理的工作进展

在2013年度我与中国科学院国际合作局帮助安排了今年三月Perry Bartlett教授和由昆士兰大学副校长Peter Høj教授率领的昆士兰大学代表团来访事宜，协助安排了脑研究所代表与中国国家科技部（MOST）相关人员的会面与洽谈，协商未来资助项目。我协助赫教授的团队申请了中科院重点国际合作项目，并最终通过评审，获得了为期三年总计一百一十万人民币的资助，用于联合实验室的合作。同时，我与中科院国际合作局以及科技部国际司保持联系，帮助昆士兰大学脑研究所和生物物理所申请国家国际合作研究基地/中心。此外，为了准备《中国科学－生命科学》专刊，我协助联络为此撰文的相关作者。九月十一日，我陪同Perry Bartlett，Pankaj Sah和Bryan Mowry教授走访了生物物理所，参与讨论了目前正在进行的各个合作项目。我期待着即将到来的2014年，能为中澳双方的合作提供更多的帮助。

孙雅晶副教授



1

The role of formaldehyde in cognitive impairment

Professors Rongqiao He (IBP) and Jürgen Götz (QBI) are working together to investigate the role of formaldehyde in tau modification and aggregation and dysfunction.

Formaldehyde, one of the most toxic organic compounds, is produced and processed in human cells. The level of human endogenous formaldehyde is maintained at a low concentration (0.01–0.08 mM in blood) under physiological conditions, but the concentration gradually increases as we age. Clinical trials have shown that the concentration of formaldehyde in urine is significantly different between normal elderly people and those with Alzheimer's disease. Abnormally high levels of intrinsic formaldehyde can lead to cognitive impairment; for instance, a decline in the ability to learn new tasks. Excess extracellular and intracellular formaldehyde could induce a metabolic response and abnormal modifications of cellular proteins such as hyperphosphorylation of the tau protein, in particular, that which is found in the nucleus of the cell. When the Senescence Accelerated Mouse P8 (SAMP8) is more than 3 months old, it displays an imbalance of brain formaldehyde metabolism and a distinct learning impairment. Epidemiological investigation showed that the intrinsic formaldehyde level of ageing people (over the age of 65, n=606) is closely related to their education level. That is to say, illiterate people were found to have high concentrations of intrinsic formaldehyde, but those with higher levels of education (more than 12 years) had relatively low concentrations of formaldehyde. It therefore appears that formaldehyde plays a role in learning. Chronic impairments of the brain resulted from formaldehyde stress could be one of the risk factors for age-related cognitive impairment.

2

甲醛在认知损伤中的重要作用

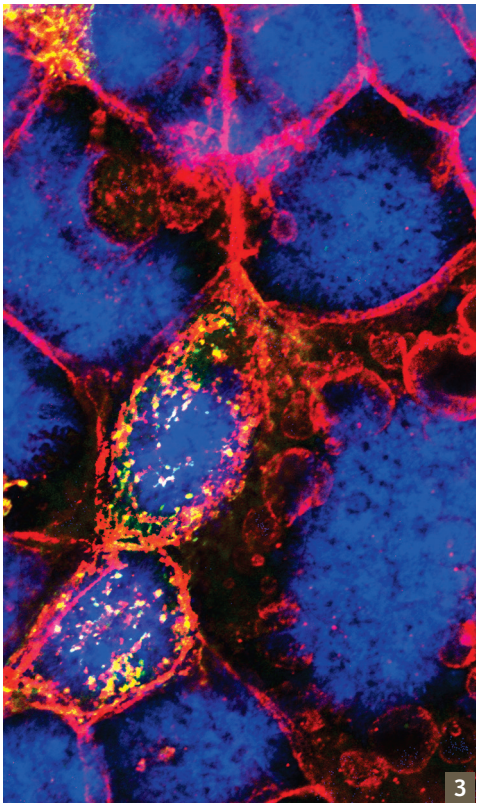
目前Jürgen Götz教授与赫荣乔教授正在合作研究：甲醛导致tau蛋白的错误修饰和聚积的机制。在生理条件下，人体细胞在不断产生并利用甲醛这一剧毒有机化合物，但血液中的甲醛浓度始终维持在0.01–0.08 mM的低浓度状态；随着衰老，体内甲醛浓度逐渐升高。临床实验表明，老年痴呆患者尿甲醛浓度显著高于同龄正常对照组，甲醛浓度的异常升高可以导致认知功能的损伤，例如会降低学习新任务的能力。细胞内外异常聚集的甲醛可导致异常的代谢反应以及细胞蛋白的异常修饰，例如tau蛋白的异常磷酸化，此结论已在细胞核中得以证实。三月龄加速衰老鼠(Senescence Accelerated Mouse P8,SAMP8)出现认知损伤，同时伴有脑内甲醛代谢失调。对606位老龄人（大于65岁）的流行病学调查显示，内源性甲醛与学历水平密切相关，即学历越低（包括文盲）体内甲醛浓度越高，反之，学历越高者体内甲醛浓度相对较低。这些结果提示，甲醛与学习记忆密切相关，其代谢失衡可能是老年认知损伤的重要危险因素之一。

1. Joe Li. Postdoctoral Research Fellow with Professor Götz.
2. Professor Jürgen Götz.

1. GÖtz教授实验室博士后Joe Li.
2.。J ü rgen GÖtz教授

Neural circuits of learning and memory

Professors Rongqiao He (IBP), Li Liu (IBP), Yan Zhu (IBP) and Perry Bartlett (QBI), along with Associate Professors Ying Liu (IBP), Bruno van Swinderen (QBI) and Helen Cooper (QBI) have been awarded 1.1 million RMB by the External Cooperation Program of BIC, CAS. This follows on from the success of the previous cooperative program. Funding will support the joint project "The mechanisms of learning-memory and the related brain disorders". The project aims to reveal the neural circuits involved in learning and memory, and the genetic and epigenetic mechanisms of the related brain dysfunctions.



3. Loss of the neuronal protein neogenin causes intracellular lipid bubbles to form, whereas excess of adhesion protein cadherin causes surrounding cells to be extra sticky (red). Image Natalie Lee, Cooper Laboratory.

3. 神经元蛋白neogenin的缺失导致细胞内脂质泡生成，过多的粘附蛋白使周围细胞粘性超强（红色）。Cooper实验室Natalie Lee摄。

学习与记忆的神经环路

鉴于此前在学习与记忆神经环路研究上取得的良好成绩，生物物理所的赫荣乔教授，刘力教授，朱岩教授，刘缨副教授，和昆士兰大学脑研究所的Perry Bartlett教授，Bruno van Swinderen副教授以及 Helen Cooper 副教授获得了中国科学院国际合作局一百一十万元人民币的资助，用于继续支持名为"学习记忆及脑功能障碍的遗传和环境机制"的项目，此项目旨在揭示学习与记忆的神经环路，以及相关脑功能障碍的遗传和表观遗传机制。

RESEARCH

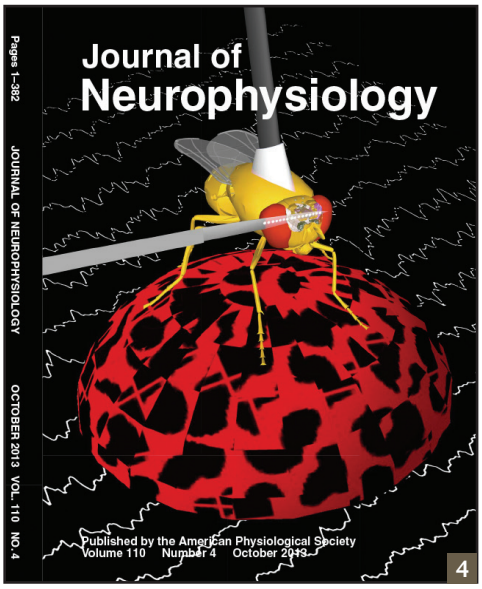
Novel brain recording paradigms for Drosophila

Professor Li Liu's (IBP) and Associate Professor Bruno van Swinderen's (QBI) research was featured on the cover of the October issue of the *Journal of Neurophysiology*. This collaboration, which has now been established for 3 years, is focussed on the development of novel brain recording paradigms for *Drosophila*, especially in behaviourally relevant contexts, with flexible control of visual stimuli. These paradigms have been adapted to the results of a genetic screen for visual attention mutants previously conducted by IBP PhD student Yanqiong Zhou, who is now a postdoctoral researcher in the van Swinderen laboratory.

Whole-brain readouts for *Drosophila* were obtained using a simple multichannel recording preparation to study electrical activity across the brains of flies exposed to different sensory stimuli. Using this technique they were able to record both endogenous and stimulus-specific oscillations throughout the fly brain. This novel multichannel recording and brain registration approach provides an effective way to track activity simultaneously across the fly brain, making it possible to investigate the functional roles of oscillations in processing sensory stimuli and modulating behaviour. Neuronal oscillations in the human brain have been associated with a variety of behavioural states, such as sleep and attention. Finding similar signatures in the *Drosophila* brain will allow for a greater understanding of the role of oscillations in normal brain function. This research is ongoing, with plans for further publications already well advanced.

Two PhD students, Ms Leonie Kirszenblat (visual attention) and Mr Melvyn Yap (central complex functions, pictured above), are currently working on research related to this project in the van Swinderen laboratory.

There have been numerous exchanges to get this project off the ground (two by Dr Liu, three by Dr van Swinderen, one by PhD student Mr Yap, one by postdoctoral researcher Dr Ben Kottler, and two visits by Dr Zhou to QBI, first as a PhD student, and then as a postdoctoral researcher). Further visits are planned.



4

研究进展
果蝇脑功能记录新方法

生物物理所刘力教授与昆士兰大学脑研究所Bruno van Swinderen副教授的合作研究成果登载在了十月份的Journal of Neurophysiology上，并作为封面重点介绍。双方的合作研究始于三年前，专注于建立在灵活控制视觉刺激的条件下相关行为过程中果蝇脑功能记录的新方法。这些方法已用于对视觉注意突变体的研究，这些突变体是由生物物理所周艳琼博士通过遗传筛选得到的。目前周艳琼是van Swinderen实验室的博士后研究人员。

果蝇的全脑记录是给予果蝇不同的感官刺激，使用一个多通道记录设备来研究果蝇脑中的电活动。这一技术使得他们可以记录果蝇全脑中内源的和对于不同刺激所产生的振动。这一新颖的多通道记录方式可以有效地同时跟踪果蝇脑内的电活动，这也使研究感官刺激处理和行为调节时振动的功能性作用成为可能。人脑中神经元的振动与多种行为状态相关，比如睡眠和注意。在果蝇脑中发现相似的特征，可以在很大程度上帮助理解正常大脑功能中振动的作用。这个研究尚在进行中，并已有计划发表相应的文章。

目前在Bruno van Swinderen副教授的研究团队中，有两位博士生在参与此项目的相关研究，他们分别是Leonie Kirszenblat (主攻视觉注意方向)和 Melvyn Yap（主攻中央复合体功能）。

为了此项目的顺利开展，双方进行了多次交流（其中刘力博士两次，van Swinderen三次，博士生 Melvyn Yap以及博士后Ben Kottler博士各一次，周艳琼博士两次，一次是作为博士生，一次作为博士后）。而且朱岩博士及学生已定于十一月访问昆士兰大学脑研究所。

4. **Paulk, A.C., Zhou, Y., Stratton, P., Liu, L. & van Swinderen, B.** (2013) Multichannel brain recordings in behaving *Drosophila* reveal oscillatory activity and local coherence in response to sensory stimulation and circuit activation. *Journal of Neurophysiology*, 110: 1703-1721.

4. 登载了合作研究成果介绍的Journal of Neurophysiology杂志十月份封面。

RESEARCH
Ribosylation and neural cell death

Advanced glycation end products (AGEs) have been implicated in the chronic complications of diabetes mellitus and have been reported to play an important role in the pathogenesis of some neurodegenerative diseases, such as Alzheimer's disease. D-ribose is a naturally occurring pentose monosaccharide present in all living cells and their microenvironments, and is a key component of numerous biomolecules involved in many important metabolic pathways. It also participates in the glycation of proteins producing advanced glycation end products (AGEs) that lead to cell dysfunction and subsequent cognitive impairments.

The work in Professor Rongqiao He's laboratory has shown that glycation with D-ribose can induce protein to aggregate into globular amyloid-like deposits and can also induce apoptosis in cultured cells. Moreover, administration of high doses of D-ribose led to impairment of spatial learning and memory, based on performance in the Morris water maze. The group also found that administration of D-ribose triggered the hyperphosphorylation of tau protein at multiple residues (Ser214, Thr181 and Ser396) in the brain of C57BL/6 mouse and neuroblastoma N2a cells. Ribosylated AGEs also activate CaMKII, which causes hyperphosphorylation of tau. More recently, the group found that the uric ribose level of diabetic patients was higher than healthy controls. Thus, targeting ribosylation may be a promising therapeutic strategy to prevent Alzheimer's disease-like tau hyperphosphorylation and diabetic encephalopathies.

核糖糖基化和神经细胞死亡

国际上已有研究报道了晚期糖基化终末产物（AGEs）在糖尿病并发症、神经退行性疾病如老年痴呆症中具有重要作用。作为一种还原性的能量物质，D-核糖是所有活细胞及其微环境中都存在的一种五碳糖，在体内参与多种代谢过程，具有重要的作用。核糖还能与蛋白质发生糖基化反应致AGEs生成，并可能由此使引发细胞功能异常甚至死亡，从而导致认知损伤。

中国科学院生物物理研究所赫荣乔研究组的研究结果表明，核糖能快速糖基化蛋白质，并生成具有细胞毒性的amyloid样的球状聚集物。给小鼠腹腔注射大剂量核糖能导致小鼠空间认知和记忆功能障碍。我们的近期研究表明核糖能导致动物（C57BL/6鼠）脑内和培养细胞（N2a）内tau蛋白多位点(Ser214, Thr181 and Ser396)的过度磷酸化，并且核糖糖基化修饰产生的AGEs通过激活CaMK II 导致tau蛋白过度磷酸化的效应。与临床医院的合作研究发现糖尿病人尿核糖显著升高。因此，核糖糖基化修饰可能成为糖尿病和老年痴呆症的潜在研究靶点。

RESEARCH
Building a better dynasore

Findings stemming from a research collaboration between Professor Jianyuan Sun's group at IBP and Associate Professor Frederic Meunier's group at QBI has resulted in a recent publication in the journal *Traffic**. The work, which Dr Tam Nguyen began during his time at IBP as part of a Q-CAS Early Career Fellowship, investigated the effect of inhibiting the function of dynamin, a protein important to the process of neurotransmission. More specifically, it assessed the effectiveness of using a newly developed small molecule inhibitor of dynamin, called Dyngo4a, as tool for studying the function of dynamin in synaptic vesicle endocytosis. The study showed that Dyngo4a was a potent inhibitor of dynamin, and that dynamin function was essential for synaptic vesicle recycling, a process that is critical for sustaining neurotransmission. The effectiveness of Dyngo4a as a small molecule inhibitor represents a promising platform from which other inhibitors towards other protein targets can be developed to aid in studying their various cellular functions.

研究进展
研发更好的dynamin蛋白抑制剂

生物物理所孙坚原教授的团队与昆士兰大学脑研究所Frederic Meunier团队研究的成果已经发表在Traffic期刊上。这项工作最早由Tam Nguyen博士开始，Tam Nguyen博士当时是作为昆士兰州资助的青年研究员，在中国科学院生物物理所开展对阻断dynamin蛋白作用后的效果研究。dynamin蛋白是神经传递过程中重要的蛋白质。特别需要指出的是，这项研究还确定了使用新开发的名为Dyngo4a的小分子抑制剂作为工具来研究抑制剂对突触囊泡内吞的作用。该项研究表明，Dyngo4a是一种dynamin蛋白的抑制剂，而且 dynamin蛋白是突触囊泡循环的关键蛋白，对维持神经信号传输至关重要。作为小分子抑制剂，Dyngo4a的效用为研发dynamin蛋白质的其它抑制剂提供了平台，有助于研究它们在细胞生物学中的不同功能。

*McCluskey, A., Daniel, J.A., Hadzic, G., Chau, N., Clayton, E.L., Mariana, A., Whiting A., Gorgani, N.N., Lloyd,J., Quan,A., Moshkanbaryans, L., Krishnan, S., Perera, S., Chircop, M., von Kleist L., McGeachie, A.B., Howes, M.T., Parton, R.G., Campbell, M., Sakoff, J.A., **Wang, X., Sun, J.Y.**, Robertson, M.J., Deane, F.M., **Nguyen, T.H., Meunier, F.A.**, Cousin, M.A., Robinson, P.J. (2013) Building a better dynasore: The dyngo compounds potently inhibit dynamin and endocytosis. *Traffic*, 14:1272-1289.

RESEARCH
The effects of the hypomagnetic field

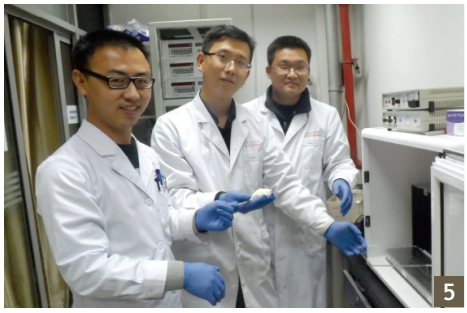
The environmental magnetic field is lower in outer space, and has been reported to disturb an organism's functional state; for example, in humans, disturbances in circadian rhythm, vision and cognitive processes have been observed. It is therefore important to understand the effect of this lowered magnetic field on the human body – as this will be important for the future healthcare of our astronauts. The key aim of the research between Professor Rongqiao He's laboratory (IBP) and Professor Perry Bartlett's laboratory (QBI) is to understand the potential neurobiological and cognitive effects of the hypomagnetic field (HMF). Dr Weichuan Mo, who holds a joint appointment between IBP and QBI, helped to develop and build a hypogeomagnetic animal rearing system, and has used this system to test the effects of the hypomagnetic environment. The team's most recent work, which was published in *PLoS ONE**, showed that HMF exposure accelerated cell proliferation of human neuroblastoma cells by promoting progression of a specific phase of the cell cycle. This is the first study to show such an effect, and the methods used in the study provide a novel means by which to study the mechanisms underlying the effects of the HMF.

5. Researchers for the HMF project include L-R: Zijian Zhang, Jingpeng Fu, Weichuan Mo.
亚磁研究项目青年成员：张子剑，付晶鹏，莫炜川（从左至右）

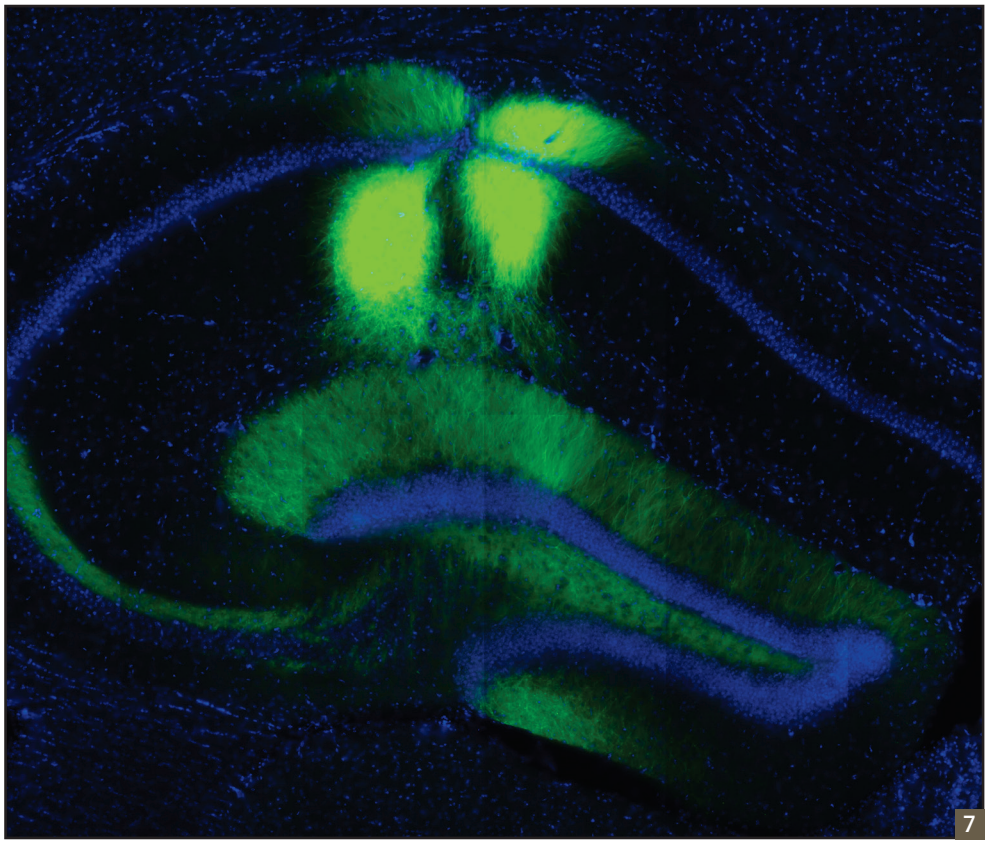
研究进展
亚（地）磁场的影响

外太空环境磁场为远低于地磁场的亚（地）磁场，已有研究显示亚磁场对生物有多方面的负面影响，如干扰人昼夜节律、视觉和认知过程。因此，了解这种低弱磁场对于人体的影响非常重要，尤其对未来外太空探索中宇航员的健康保护具有重要意义。赫荣乔教授和Perry Bartlett教授实验室的合作研究，旨在了解亚磁场对于神经和认知功能的潜在影响。莫炜川博士在昆士兰大学脑研究所和生物物理所的共同支持下，作为骨干成员参与开发建立了亚磁动物培养系统，并利用这个系统研究了亚磁环境的影响。这个团队最新的工作成果已经在PLoS ONE*发表。研究表明，亚磁环境促进神经母细胞瘤细胞分裂周期特定时期进程，从而加速细胞增殖。这是首次发现亚磁场的这种影响作用，这次研究中所使用的方法也为亚磁生物效应的机制研究提供了一种新的思路。

***Mo, W., Zhang, Z., Liu, Y., Bartlett, P.F., He R.** (2013) Magnetic shielding accelerates the proliferation of human neuroblastoma cell by promoting G1-phase progression. *PLoS ONE*, 8: e54775.



6. Dr Cornelia Strobel (QBI).
6. QBI Cornelia Strobel 博士。



7

RESEARCH
Synaptic circuits mediating emotional response to pain

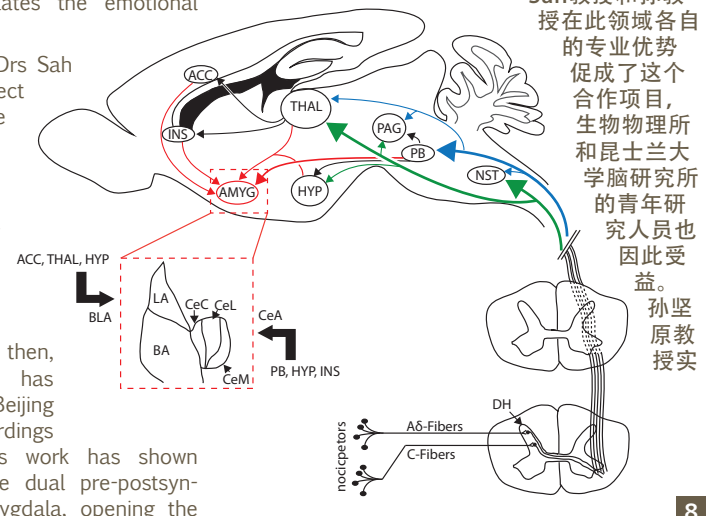
Pain is a subjective experience in response to stimuli that signal potentially harmful physiological and pathological states. Apart from the experience of pain, there is always an associated emotional response that in many cases changes a person's response to the pain. For example, chronic pain is often associated with anxiety-like conditions. These emotional responses arise from the projections of painful stimuli to the emotional centre of the brain, the amygdala. Professors Pankaj Sah (QBI) and Jianyuan Sun (IBP) have collaborated to study the neural circuits that mediate pain pathways in the amygdala. Pain-carrying pathways to the amygdala are modulated by the hormone noradrenaline. Situations in which this hormone is released have a changed response to painful stimuli. The collaboration between Drs Sah and Sun is investigating the molecular pathways by which noradrenaline modulates the emotional response to pain.

The combined expertise of Drs Sah and Sun made this project possible. That expertise has now been shared with early career researchers at both QBI and IBP. Xufeng Zhu, a PhD student in Dr Sun's laboratory travelled to Brisbane from Beijing in 2012 to learn patch-clamp techniques in acute brain slices. Since then, Dr Cornelia Strobel (QBI) has spent two periods in Beijing learning presynaptic recordings in acute brain slices. This work has shown that it is possible to make dual pre-postsynaptic recordings in the amygdala, opening the possibility of studying synaptic transmission and its associated proteins in a detailed manner. This work is currently being written up for a review article. Moreover, as a result of this work, Dr Strobel has been successful in obtaining a Visiting Scientist Fellowship from the Chinese Academy of Sciences for 2014.

介导疼痛情绪反应的神经突触回路

疼痛是一种对于外界刺激主观性的经历，这些刺激信号对生理和病理状态都有潜在的危害。除了疼痛本身，人们还会随之伴有一种疼痛情绪反应，在很多情况下这种情绪反应会改变人们对疼痛的感受。例如，慢性痛常会伴有焦虑样状态。这些情绪反应是大脑对疼痛刺激投射到情绪处理中枢——杏仁核后产生的。Pankaj Sah教授和孙坚原教授合作研究了杏仁核中传递疼痛信息的神经回路。因为传递向杏仁核的疼痛信号通路由去甲肾上腺素来调节，所以疼痛刺激的反应会因释放这种荷尔蒙而改变。Pankaj Sah教授和孙坚原教授的合作旨在研究去甲肾上腺素在躯体感受疼痛时如何调节情绪上的反应。

Sah教授和孙教授在此领域各自的专业优势促成了这个合作项目，生物物理所和昆士兰大学脑研究所的青年研究人员也因此受益。孙坚原教授实验室的博士生邱徐峰首先于2012年赴布里斯班学习急性脑片模片钳技术。此后，昆士兰大学脑研究所的Cornelia Strobel博士两次赴北京学习突触前记录，探索对杏仁核进行突触前、后双重同时记录的可行性。此项研究将为疼痛情绪相关的突触传递及其相关蛋白质的研究开辟新的途径。目前有关这项工作的综述正在撰写中。此外，正是由于这项研究，Cornelia Strobel博士获得了中国科学院2014年度青年科学家项目的资助。



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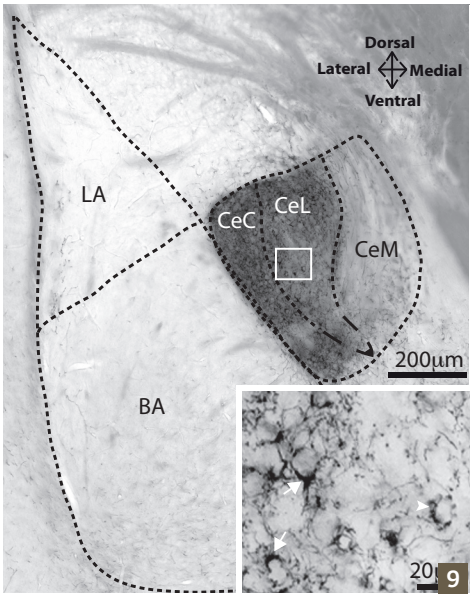

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7. Lenti-ChannelRhodopsin infection in the hippocampus expressing a fusion protein (green). Li Xu, Sah Laboratory.
7. 转染的Lenti-ChannelRhodopsin 融合蛋白在海马的表达（绿色）。Sah实验室Li Xu提供。

8. From nociception to emotion: pain circuits involved in direct or indirect projections to the amygdala. Image Cornelia Strobel and Robert Sullivan, QBI.
9. Parabrachial target site in the mouse brain amygdala. Image Cornelia Strobel and Robert Sullivan, QBI.

8. 从痛觉到情绪：痛觉回路与至杏仁核的直接和间接投射相关。QBICornelia Strobel和 Robert Sullivan 提供。
9. 小鼠脑杏仁核内的臂旁投射区。QBICornelia Strobel和Robert Sullivan供图。

中国科学院生物物理研究所
Institute of Biophysics, Chinese Academy of Sciences
The University of Queensland | QBI
Queensland Brain Institute

VISITS AND EVENTS

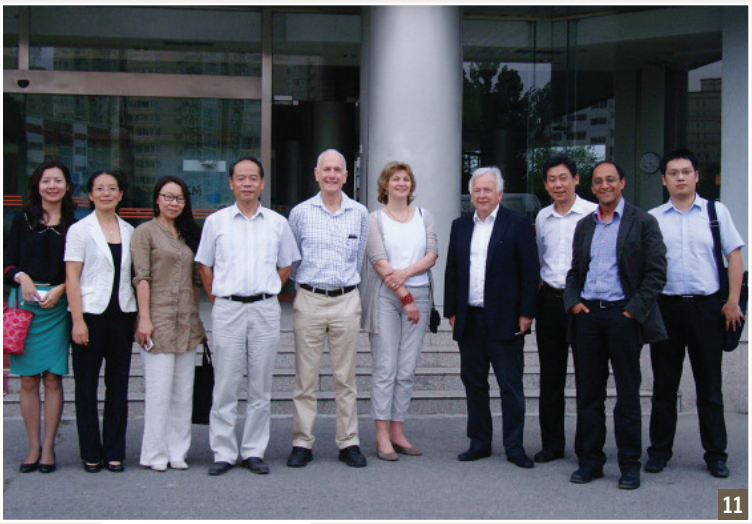
合作重点课题

The new Vice-Chancellor of The University of Queensland, Professor Peter Høj, visited IBP in March as part of his first Senior Executive Mission to China. The main focus of the visit was for him to meet some of UQ's key research partners. Professor Høj was most impressed with the collaborations being undertaken within the Joint Laboratory.

2013年3月21日上午，澳大利亚昆士兰大学（UQ）新任副校长Peter Høj教授一行来到中国进行学术访问，与中-澳神经与认知科学联合实验室的主要研究人员进行了座谈，对联合实验室开展的合作研究留下深刻印象。

Professors Perry Bartlett, Pankaj Sah and Bryan Mowry, and Associate Professor Naomi Wray visited IBP on the 11th of September. Many useful discussions were had about future research plans. The visit ended with a dinner, and included colleagues from CAS.

2013年9月11日下午，QBI Perry Bartlett，Pankaj Sah，Bryan Mowry教授，Naomi Wray副教授，QBI北京办事处联络人孙雅晶副教授一行来到生物物理所和心理所，与中-澳神经与认知科学联合实验室的PI进行学术交流，了解合作进展，讨论进一步合作研究计划。中国科学院和科技部相关部门代表出席了活动。



Professor Rongqiao He and Dr Yan Wei from IBP were invited to visit QBI, where they presented their research at the 7th Alzheimer's+Parkinson's Disease (A+PD) Symposium hosted by Professor Jürgen Götz from 23-24 September. A number of QBI researchers also gave talks.

2013年9月23-24日，中国科学院生物物理研究所赫荣乔研究员和魏艳博士应邀访问了澳大利亚昆士兰大学脑研究所，参加了在昆士兰大学脑研究所举行的“第七届阿尔兹海默病及帕金森氏综合症国际学术研讨会”，并分别做学术报告。

10. Professor Ronqiao He provides an update on the Joint Laboratory to the members of UQ's Senior Executive mission during their visit to China in March.

11. QBI visit to IBP in September, from L-R: Ma Li, Ying Liu, Maggie Sun, Xiaoke Xia, Bryan Mowry, Naomi Wray, Perry Bartlett, Li Liu, Pankaj Sah, Bolun Ning.

12. Rongqiao He presenting a talk during the 7th A+PD Symposium at QBI in September.

10. 昆士兰大学高层领导于三月访问中国科学物理研究所时，赫荣乔教授向访问团介绍联合实验室成员。

11. QBI成员九月到访IBP合影：马丽，刘缨，孙雅晶，夏小科，Bryan Mowry, Naomi Wray, Perry Bartlett, 刘力，Pankaj Sah, 宁博伦（从左至右）。

12. 赫荣乔在QBI举行的“第七届阿尔兹海默病及帕金森氏综合症国际学术研讨会”上做学术报告。