

出國報告（出國類別：國際會議）

第二十屆人類腦成像組織年會與會報告

服務機關：國立中央大學

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派赴國家：德國

出國期間：2014/06/04-2014/06/16

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摘要

人類腦成像組織年會為神經科學界重要的研討會之一，重要的腦成像分析技術及各項相關研究成果皆會在研討會上發表。本次會議期間為 2014 年 6 月 8 日至 6 月 12 日，地點為德國漢堡會議中心。除第一天的開幕儀式外，每日議程皆由早上八點開始，會議內容包括口頭、海報報告，主題演講及工作坊。本次會議中，特別針對腦刺激技術與顱內電生理記錄有特別的主題演講，對於本人的研究有莫大幫助。本人也在本次會議中以海報呈現個人研究成果，與其它與會者有深入之討論，對未來研究及文章撰寫有非常大的幫助，會議中獲得各項研究技術的最新資訊，也將與台灣研究團隊共同分享。

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壹、目的

人類腦成像組織年會為神經科學界重要的研討會之一，重要的腦成像分析技術及各項相關研究成果皆會在研討會上發表。本次會議中，特別針對腦刺激技術與顱內電生理記錄有特別的主題演講，對於本人的研究有莫大幫助。本人也在本次會議中以海報呈現個人研究成果，期望能與其它與會者有深入之討論，對未來研究及文章撰寫能有所助益。

貳、過程

本次會議時間為 6/8-6/12，共五天，地點在德國漢堡的漢堡會議中心。除第一天的開幕儀式外，每日議程皆由早上八點開始，會議內容包括口頭、海報報告，主題演講及工作坊，直至晚上五六點結束。本人在開幕前一天便抵達漢堡，在會議進行期間皆非常緊湊的參與各項會議活動。本次參展的海報多達四千多張，各項演講的內容也非常豐富，在同一時間皆有不同演講主題同時發表，以下列舉本人出席的場次及內容。

第一天由 Eve Marder 主講關於大腦神經系統中的發展可塑性，做為開場及主題演講。第二天主要參與的演講內容是著重在腦造影的技術應用層面，分別從不同測量參數來探討腦造影技術的解釋能力，以及在人機介面中，腦造影扮演的角色為何。最後的場次則是著重腦造影的數據分析方法，並利用電腦模型來提供不同的分析方式。

第三天首先的場次是介紹電腦模型與腦造影技術如何應用在跨顱刺激術，由於近年跨顱刺激術受到各方重視，使用刺激技術的研究也越來越多，但如何客觀量化刺激的結果，是需要更審慎評估，這場演講提供了不同模擬方式來解釋目前電刺激的可能機制。其它場次則針對過往的腦結構研究和認知功能做了歷史性的回顧，並著重在功能性磁共振成像方面。

第四天的場次說明了不同研究取向的造影技術如何整合，也強調了突觸間隙在腦造影技術的角色為何以及與其對應的進階腦造影技術。除了研究技術外，下午的場次也提供嶄新的研究呈現方式，相較於以往傳統的心理學實驗刺激，更進一步使用與日常生活相同的視覺刺激，來了解腦造影分析應用於一般生活情境的可能性。

第五天為會議最後一天，則是著重在社會互動的研究上，了解在團體互動或是同理心背後的神經生理機制。

詳細參與議程：

6/8 星期日

17:30-19:00 Opening Ceremonies and Talairach Lecture

6/9 星期一

8:00-9:15 Morning workshop: the predictive power of neuroimaging

9:30-10:15 Keynote lecture: toward ultra-high resolution models of the human brain

10:30-11:45 Brain machine interfaces: foundations and Perspectives

12:45-14:45 Poster session

- 14:45-16:00 Symposium: intracranial electrophysiology of resting state networks
- 16:15-17:00 Keynote lecture: Racial in-group favoritism in emotion understanding and sharing: Neuroimaging approach
- 17:15-18:30 Oral sessions: Multivariate Modelling and Machine Learning

6/10 星期二

- 8:00-9:15 Morning workshop: Computational and imaging tools for targeting non-invasive brain stimulation
- 9:30-10:15 Keynote lecture: Visualizing Human Brain Anatomy
- 10:30-11:45 Oral session: Cognitive Functions
- 12:45-14:45 Poster session
- 14:45-16:00 Symposium: The Many Faces of “Top-down” : An Integrative Perspective
- 16:15-17:00 Keynote lecture: A common high-dimensional linear model of representational spaces in human cortex’

6/11 星期三

- 8:00-9:15 Morning workshop: What Can We Learn from Integrating Multimodal Neuroimaging Data?
- 9:30-10:15 Keynote lecture: The Role of Neuroimaging in Redefining Neuroplasticity Beyond The Synapse
- 10:30-11:45 Oral session: Brain Stimulation
- 12:45-14:45 Poster session
- 14:45-16:00 Symposium: Novel uses of natural viewing paradigms in EEG, fMRI and fcMRI
- 16:15-17:00 Keynote lecture: The Role of Neuroimaging in the Human Brain Project

6/12 星期四

- 8:00-9:15 Morning workshop: The dynamic human brain
- 9:30-10:15 Keynote lecture: A core brain system in assembly of cognitive episodes
- 10:30-11:45 Oral session: Social Neuroscience
- 12:45-14:45 Poster session
- 14:45-16:00 Closing Comments and Meeting Highlights

研討會期間之外為私人行程。

參、心得與建議

本次會議中，展示了各項神經造影技術的研究現況和最新應用。由於本人研究方向著重於利用神經刺激技術及電生理活動記錄探討注意力神經網絡可謂受益良多。本次會議中也發表了腦部刺激技術的最新資料，各國研究團隊在跨顱電刺激刺激的研究方法上，已試圖利用不同頻率的交流電刺激來了解不同大腦區域之間長程溝通的問題，並根據腦結構來模擬顱內的電流走向。根據不同造影，如磁振造影結構檔、正子造影、腦部磁振擴散張量影像，目前研究者可以進一步了解在不同腦區中，從外部輸入電流刺激時，大腦內區域所接受到的電流密度及電壓大小，相較於以往的模型，可以更完整確定電流可能影響的神經活動及區域為何。

另在主題演講中，更有獨立的議程以神經刺激技術為主題，在此議程中，更能深入了解如果以不同的數學模型來解釋神經刺激技術背後的可能運作歷程。因此這次參加會議之後，收穫非常豐富。本人在會議上的海報報告，也與多位研究者互相討論，得以從不同角度來審視自己的研究成果。本人的研究目前是結合跨顱刺激及事件相關電位來探討人類大腦在偵測週邊的重要訊息時，背後的神經機制。目前本人研究發現，當大腦要重新移動注意力到週邊相關刺激時，右半腦的顱頂交界區(temporo-parietal junction, TPJ)具有決定性的功能。相較於其它腦部區域，唯有刺激右側 TPJ 會影響注意力重新移動的歷程。相較於以往腦造影技術提供的相關性證據，此結果首次證明右側 TPJ 與注意力重新移動的因果關係，並進一步提供右側 TPJ 在左右視野功能有所差異。而電生理指標更進一步指出，在注意力重新移動時，在注意力相關的電極測量上也有左右側處理不一致的現象，並且會隨著時間改變。

海報討論中其它與會者給予個人研究之建議：

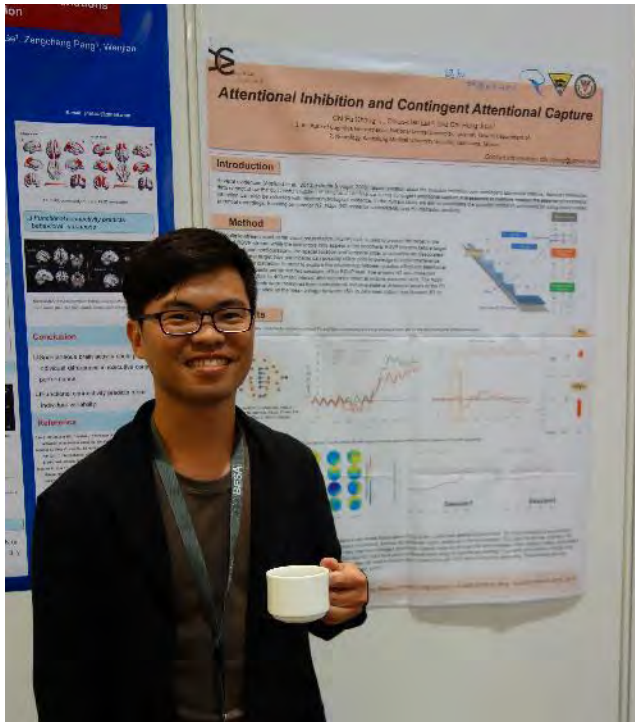
1. 利用 time-frequency 分析電生理訊息，看是不是也是注意力相關的 alpha 頻段也有所改變
2. 不同受試者是否可利用其它指標分類
3. 實驗的嘗試次可能不夠多，還沒辦法在行為表現上看到和電生理指標一樣的顯著改變，需要增加實驗的嘗試次
4. 是否考慮使用 DCI 模型來看不同腦區之間的互動
5. 注意力受到干擾前後的表現是相關或是在注意力受到干擾前電生理指標是否可以提前預測之後的表現
6. 是否考慮在記錄電生理訊號的同時，施予跨顱電刺激或磁刺激，藉此能同步了解其神經生理機制

人類腦成像組織年會每年皆吸引國際各類頂尖研究人員參加，不論是對於新資訊的補充或是個人研究的回饋，都能有非常豐富的收穫。近年來，歐美各國對於腦神經的研究持續加注研究經費及人員，去年美國總統歐巴馬更宣布執行「推進創新神經技術腦部研究」(Brain Research through Advancing Innovative Neurotechnologies, BRAIN)，本次會議中便有此研究團隊之人員在會議中介紹研究進度，繪製空前詳細的大腦活動圖。此種等級的會議讓與會者在短時間之內得以獲取大量的新知識，並讓臺灣研究人員能在這些新訊息發表在期刊前，先一步了解未來不同研究技術的可能性及發展性。雖然某些技術需要龐大的研究經費支援才可執行，但藉由參加國際會議，了解各大研究團隊所提供的研究資料，對於日後的研究仍有不少幫助。如大腦網路的組成，可提供本人更多線索來決定電磁刺激的目標腦區。

感謝貴單位此補助能讓本人在研究之餘於國際會議上補充自身的研究能量，也希望與不同研究者的會談能夠聯繫更進一步的國際合作關係，並提昇臺灣認知神經科學在國際的能見度。

肆、附錄

1. 本人與報告海報之合影
2. 大會議程





Celebrating 20 Years

humanbrainmapping.org/OHBM2014

program

OHBM 2014 Annual Meeting

June 8-12

CCH-Congress Center Hamburg

Hamburg, Germany



EGI Sponsored Lunch Symposium

Tuesday, 10 June 2014

12:00 pm – 2:30 pm, hall G1

boxed lunch provided



"Geodesic Transcranial Electrical Neuromodulation (GTEN): Dense array methods for tDCS and tACS"

Speakers:

"Goals and Challenges of Geodesic Transcranial Electrical Neuromodulation"

–Don Tucker, PhD, Chief Executive Officer, Electrical Geodesics, Inc.

"Accurate Head Models for Transcranial Electrical Neuromodulation"

–Sergei Turovets, PhD, Scientist, Electrical Geodesics, Inc.

"Visualizing the Effects of Transcranial Electrical Neuromodulation on the Cortex"

–Erik Anderson, PhD, Scientist, Electrical Geodesics, Inc.

"Integrating GTEN with Dense Array EEG"

–Phan Luu, PhD, Chief Technology Officer, Electrical Geodesics, Inc.

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www.siemens.com/neuro-MRI

The revolution in ultra-fast MR imaging for neuroscience

Siemens Lunch Symposium, OHBM 2014

Wednesday, June 11th
12:00 p.m. – 2:30 p.m.
Hall 2, Congress Center
Hamburg

Lunch will be provided
for the first 200 attendees

Driving the revolution with leading-edge technologies

Keith Heberlein, PhD, Siemens Medical Solutions, USA

Simultaneous Multi-Slice Acquisition for Connectomic Applications and Beyond

Kawin Setsompop, PhD, Center for Biomedical Imaging, MGH/HST Athinoula A. Martinos

Multislice accelerated RESOLVE for time-efficient, high-resolution diffusion imaging

Robert Frost, PhD, FMRIB Centre, University of Oxford

Multiband techniques for functional and structural neuroimaging: Technical challenges, applications and future prospects

Essa Yacoub, PhD, CMRR, University of Minnesota

Answers for life.



welcome

Thank you for joining us in Hamburg, Germany to celebrate the Organization for Human Brain Mapping's 20th Annual Meeting! Many of you have attended this meeting over the past 20 years and can serve as testament to the tremendous growth and evolution of discoveries in the field of human brain mapping. OHBM's first meeting in Paris, France drew an attendance of 700. Today, in Hamburg, you will network with and learn alongside over 3,000 of your peers.

Eve Marder will kick off our meeting as Talairach Lecturer followed by outstanding Keynote Lectures by Katrin Amunts, Shihui Han, Hanna Damasio, James Haxby, Yaniv Assaf, Richard Frackowiak and John Duncan.

We have several suggestions to help you make the most of your Annual Meeting experience:

- Attend one of many educational courses offered on Sunday including: Advanced fMRI, Anatomy and its impact on structural and functional imaging, Introduction to Imaging Genetics, Pattern Recognition for Neuroimaging (or PR4NI), Brain Stimulation: Past, Present and Future, Electromagnetical Neuroimaging, Functional ASL: Perfusion based functional MRI using arterial spin labeling, Tools to parcellate the brain and its relation to function, A New Paradigm for Studying Drug Effects: Calibrated FMRI and Resting, MR Diffusion Imaging: Getting Your Measures Right, Neuroimaging Meta-Analysis and The Art and Pitfalls of fMRI Preprocessing.
- Learn from the scientific education offered throughout the four days of the meeting including three member-initiated symposia, one LOC symposium, oral sessions and morning workshops.
- Learn the results from this year's OHBM Hackathon and participate in the ongoing dialogue throughout the meeting. Learn more about the OHBM Hackathon.
- Engage in conversation with over 2,900 poster presenters sharing the latest research in a variety of disciplines.
- Visit with our knowledgeable exhibitors to learn about the latest products and services available for the brain mapping community.
- Take time to build new relationships during one of several networking events, including the Welcome Reception on Sunday; Club Night on Wednesday at Edelfettwerk; and poster wine/beer receptions being held on Tuesday and Thursday after programming.
- During and after the meeting, utilize OHBM resources including:
 - The Annual Meeting mobile app.
 - **The Onsite Career Resource room** where job seekers can connect with employers Onsite Career Resource.
 - **The Online Library**, which contains program presentations from this and past OHBM meetings.
 - **E-Posters**, which contain hundreds of posters that you may have missed.

Don't miss the Opening Ceremonies on Sunday, June 8th where OHBM will present its first-ever OHBM Glass Brain Award! This award was established to recognize and reward a lifetime of achievement by a gifted and talented individual using neuroimaging to discover original and influential findings to the organization of the human brain. OHBM is excited to add this prestigious award to this year's Annual Meeting and to future meetings.

We hope you find the 20th Annual Meeting of the Organization for Human Brain Mapping memorable and scientifically exciting. We thank each of you for joining us here in Hamburg and look forward to your involvement.

Sincerely,

Stephen Smith
Chair, Council

Pedro Valdes Sosa
Chair, Program Committee

Arno Villringer & Christian Buechel
Co-Chairs, Local Organizing Committee

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Sunday, June 8

EDUCATIONAL COURSES

8:00 – 17:00

Full Day CoursesAdvanced fMRI Course
*Hall 1*Anatomy and its impact on
structural and functional imaging
*Hall A*Introduction to Imaging Genetics
*Hall B*Pattern Recognition for
NeuroImaging (or PR4NI)
Hall C

8:00 – 12:00

Morning CoursesBrain Stimulation: Past,
Present and Future
*Hall D*Electromagnetical Neuroimaging
*Hall E*Functional ASL: Perfusion based
functional MRI using arterial spin labeling
*Hall F*Tools to parcellate the brain and
its relation to function
Hall 8

13:00 – 17:00

Afternoon CoursesA New Paradigm for
Studying Drug Effects:
Calibrated fMRI and Resting
*Hall D*MR Diffusion Imaging:
Getting Your Measures Right
*Hall E*Neuroimaging Meta-Analysis
*Hall F*The Art and Pitfalls of fMRI
Preprocessing
Hall 8

17:30 – 19:00

**Opening Ceremonies and
Talaïrach Lecture**
*Hall 1***Eve Marder**Variability, Robustness and
Compensation in Neurons and Networks

19:00 – 21:00

Welcome Reception*Hall 3, 4 and Ground Floor Foyer*

Monday, June 9

8:00 – 9:15

MORNING WORKSHOPSA brave new world? Ethical considerations
for individual assessments based on
advanced neuroimaging
*Hall G1*Methodological Advances in
Lesion Symptom Mapping
*Hall 1*Cerebro-cerebellar interplay and cognition
*Hall 2*The predictive power of neuroimaging
Hall G2

15 minute break

9:30 – 10:15

Keynote Lecturer: Katrin Amunts"Towards ultra-high resolution
models of the human brain"
Hall 1

10:30 – 11:45

LOC SymposiumBrain Machine Interfaces: Foundations
and Perspectives
Hall 1

11:45 – 12:45

Lunch

12:45 – 14:45

Poster Session*Hall H*

14:45 – 16:00

Symposium:Intracranial Electrophysiology of
Resting State Networks
Hall 1

16:15 – 17:00

Keynote Lecture: Shihui Han"Racial in-group favoritism in emotion
understanding and sharing:
Neuroimaging approach"
Hall 1

15 minute break

17:15 – 18:30

Oral SessionsO-M1: Multivariate Modelling and
Machine Learning
*Hall 8*O-M2: Imaging Physiology
*Hall 2*O-M3: Learning and Memory
*Hall G1*O-M4: Psychiatric disorders
*Hall G2*O-M5: Lifespan Development
Hall 1

Tuesday, June 10

8:00 – 9:15

MORNING WORKSHOPSBiophysics, acquisition methods and
interpretation of laminar specific
functional MRI
*Hall 2*Is there a continued role for PET in
studies of normal human cognition?
*Hall G1*Computational and imaging tools for
targeting non-invasive brain stimulation
*Hall 1*Imaging the human brainstem in
VIVO: techniques and applications
Hall G2

15 minute break

9:30 – 10:15

Keynote Lecturer: Hanna Damasio"Visualizing Human Brain Anatomy"
Hall 1

10:30 – 11:45

Oral SessionsO-T1: Neuroanatomy
*Hall 1*O-T2: Imaging Methods
*Hall 2*O-T3: Higher Cognitive Functions
*Hall G1*O-T4: Genetics
Hall G2

11:45 – 12:45

Lunch

12:45 – 14:45

Poster Session*Hall H*

14:45 – 16:00

Symposium:The Many Faces of "Top-down":
An Integrative Perspective
Hall 1

15 minute break

16:15 – 17:00

Keynote Lecture: James Haxby"A common high-dimensional linear
model of representational spaces
in human cortex"
Hall 1

17:00 – 18:30

Poster Reception*Hall H*

program-at-a-glance

Wednesday, June 11

8:00 – 9:15

MORNING WORKSHOPS

What Can We Learn from Integrating Multimodal Neuroimaging Data?

Hall G2

The hemodynamic response and neurovascular coupling:
from sources to measures to models

Hall G1

Mobile Brain/Body Imaging (MoBI) –
New directions in human neuroscience

Hall 2

Advances in neuroscience and clinical
research using ultra-high speed fMRI

Hall 1

15 minute break

9:30 – 10:15

Keynote Lecture: Yaniv Assaf

“The Role of Neuroimaging in Redefining Neuroplasticity
Beyond The Synapse “

Hall 1

15 minute break

10:30 – 11:45

Oral Sessions

O-W1: Brain Stimulation

Hall 1

O-W2: Resting-State Networks and Functional Parcellation

Hall 2

O-W3: Perception and Attention

Hall G1

O-W4: Developmental Disorders

Hall G2

11:45 – 12:45

Lunch

12:45 – 14:45

Poster Session

Hall H

14:45 – 16:00

Symposium:

Novel uses of natural viewing paradigms in EEG, fMRI and fcMRI

Hall 1

15 minute break

16:15 – 17:00

Keynote Lecture: Richard Frackowiak

“The Role of Neuroimaging in the Human Brain Project”

Hall 1

15 minute break

17:15 – 18:15

Town Hall Meeting

Hall 1

Transition Time

20:30 – 2:00

Club Night

Edelfettwerk

Thursday, June 12

8:00 – 9:15

MORNING WORKSHOPS

The Dys-Connectome:

Effects of focal injury on the brain's
functional organization and behavior

Hall G1

The dynamic human brain

Hall 2

Using neuroimaging to develop novel
biomarkers: A case study of
“big data” in Huntington’s disease

Hall G2

Mapping the Human Language Network:

Development, Disorder and
Culture-Specific Research

Hall 1

15 minute break

9:30 – 10:15

Keynote Lecture: John Duncan

“A core brain system in assembly
of cognitive episodes”

Hall 1

15 minute break

10:30 – 11:45

Oral Sessions

O-TH1: Social Neuroscience

Hall 1

O-TH2: Modeling Electrophysiology

Hall 2

O-TH3: Emotion and Motivation

Hall G1

O-TH4: Neurologic Disorders

Hall G2

11:45 – 12:45

Lunch

12:45 – 14:45

Poster Session

Hall H

14:45 – 16:00

**Closing Comments and Meeting Highlights –
Susan Bookheimer**

Hall 1

16:00 – 17:30

Farewell Poster Reception

Hall H