

出國報告（出國類別：參加國際會議）

參加 **2013** 年第二屆
國際藻類研討會出國報告書
2nd Annual International Congress of
Algae-2013 (AICA-2013)

服務機關：國立海洋生物博物館

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派赴國家：大陸 杭州

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摘要

國際藻類研討會(AICA)致力於藻類的開發和利用並且此會議在該領域中占有領先的地位，而此次在中國杭州舉行。而本次研討會的主題為針對「藻類開發研究及培養技術」議題深入討論。會議邀請來自世界 60 多個國家和地區在藻類領域具有影響力的各研究機構專家及學者，將在藻類生物燃料，藥物開發，環境及其他工業應用，水產養殖業和農業等研究領域的發表最新的研究進展及科技成果，引領國際藻類領域的發展趨勢和動向。會議同期也舉辦世界海洋大會、海水養殖和漁業大會及海洋生物科技大會，促使各界的產業合作及經驗交流。研討會中邀請來自世界各地專業的研究人員，提出與藻類中相關研究，以案例的方式討論及提供目前最新的研究進展及解決問題的方法。本人也在「藻類細胞及分子生物學」會議中發表有關於與珊瑚共生下共生藻油體「Isolation of Oil Body Proteins from the Endosymbiotic Symbiodinium」的最新進展，藉由此次的研討會增進國際學術合作及交流的機會。

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一、會議之背景及目的

會議的背景：由大陸中國國家「中國藻業協會」、「外國人才信息研究中心」、「中國船東協會」、「中國漁業協會」、「中國船舶工業行業協會」、「中國休閒垂釣協會」主辦，百奧泰國際會議有限公司承辦的 2013 中國杭州第二屆國際藻類大會『Algae-2013』。

原定計畫目標：為透過邀請來自世界 60 多個國家和地區在藻類領域最具影響力的 300 多位研究學者及專家與會進行演講，將向世界傳遞藻類領域的最新技術及科技成果。

本研討會的主題為「藻類研究的願景」。會議中共設置了四十多場研討會，涵蓋了藻類領域研究各方面內容，主要有：藻類的開創性研究、藻類培養技術、藻類生物燃料、藻類藥物開發、藻類在工業及水產養殖的應用、藻類與環境、藻類高附加值產品、有害藻華的控制及藻類經濟等。




緣起：中國藻業協會（原中國海藻工業協會，1989 年 3 月 31 日成立），是由藻類養殖、加工、流通和綜合利用企業，相關科技等。其協會的宗旨為—推動藻類產業組織建設，提高產業市場化運作能力；並加強各協會間的溝通與協高，促進產業資源合理配置；建設產業技術創新平台，提高產業科技水平，增加產業經濟效益、社會效益及生態效益。

研討會預期效益：會議同期並舉辦中國第二屆世界海洋大會、世界海水養殖和漁業大會及第三屆海洋生物技術大會，並同時展覽有海洋漁業、海產、海洋生物技術、造船、航海、藻類、海洋能源、環保等公司機構。藉由此研討會擴展產學合作的機會。

二、出席會議之經過及內容

筆者於 9 月 22 日由臺北松山機場搭機前往大陸杭州-蕭山機場，隨後前往本次會議中心(杭州寶盛水博園大酒店)報到註冊並住宿旅館。

9 月 23 日會議開始，全體研究人員於會議場外，拍攝團體照（圖一），於早上 9 點整於會議大廳進行開幕儀式。隨後由加拿大海洋生物技術協會的 Dr. John P. van der Meer、中國科學院的潘剛博士、美國生物燃料科學會的 Mr. Paul Laur 及美國克雷頓大學醫學院的 Dr. Thomas F. Murray 等人分別發表大會專題報告(keynote address)演說，演說的專題的主題如下表：

Plenary Lectures (WCMB & AICA)	
<i>Time: 09:15-11:20, September 25, 2013 (Wednesday); Place: Yixiangju, 1st Floor, BWMH</i>	
Moderator	<i>Dr. Lijuan Zhang</i> , Zhufe g Professor o Translational Medicine, Ocean University of China, China
09:15-09:20	Chair's Introduction
09:20-09:50	 <p><i>Title: Recent Advances in Red Algal Genomics and Biotechnology</i> Dr. John P. van der Meer, President, Pan-American Marine Biotechnology Association, Canada</p>
09:50-10:20	 <p><i>Title: In Situ Technology for Harmful Algal Bloom and Eutrophication Control in Shallow Waters: Removing, Converting and Reusing Nutrients for Sustainable Food Web</i> Dr. Gang Pan, Professor, Research Center for Eco-environmental Sciences, Chinese Academy of Sciences, China</p>
10:20-10:50	 <p><i>Title: Cliffs, Roadblocks and Detours to Profitable Cultivation of Algae for Biofuels and Bioproducts</i> Mr. Paul Laur, CEO & President, Eldorado Biofuels, USA</p>
10:50-11:20	<i>Title: Discovery and Characterization of Marine Natural Products that Target Neuronal Ion Channels</i>



Dr. Thomas F. Murray, Professor and Chair, Department of Pharmacology,
Creighton University School of Medicine, USA



圖一：全體與會研究人員團體照

經大會的專題發表演說後，隨後開始分組報告。
會議主要包括各主題：

1. 藻類系統發育、遺傳學、分類學、系統學及藻類光合系統
2. 藻類細胞分子生物學
3. 藻類生態學、演變、發展及共生藻類
4. 藻類生物化學和生理學
5. 藻類生物地理學和生物多樣性
6. 藻類生物燃料
7. 藻類與氣候環境變化
8. 藻類污水淨化，碳捕捉和回收作用
9. 有害藻華及控制
10. 有害藻類毒性
11. 藻類藥物開發

報告議題：

專題一：大型海藻的食物生產功能與生態調控作用。演講者為中國黃海水產研究所方建光研究員：大型藻類具有較高的經濟價值和生態價值，養殖的大型藻類不僅可以作為各類海洋生物的餌料，將低價值的產品轉化為營養價值較高的產品，另外也是重要的海藻化工原料和人類食品。大型海藻也是具有潛力的生物淨化器，通過光合作用利用二氧化碳，釋放氧氣，同時吸收利用水體中的溶解性無機氮和磷，進行淨化水質的作用。與其他浮游植物相比，大型藻類較容易收穫，透過收集可以進一步移除海水中過剩的碳、氮、磷等營養物質。

專題二：藻類食品—人類全營養食品。演講為中國保健協會的孫會長。演講中提到藻類應用是屬於維持生態系統的一環，並改善地球環境。藻類是屬於營養均衡及易被人體所吸收，有所謂「微型營養庫」之稱。

專題三：海洋紅藻資源及其產業化利用。演講者為中國科學院海洋研究所研究員。講述海洋中的紅藻富含有豐富的多糖、蛋白質、脂肪、維生素及礦物質等，可作為食品飼料、藥物和化工原料，並且一些特有的紅藻如凹藻等被研究富含有抗腫瘤和抗老的物質，具有開發的研究價值。

舉凡各類與藻類開發及應用的相關議題都包含在討論議程中，筆者於「藻類細胞及分子生物學」會議中發表有關於與珊瑚共生下共生藻油體「Isolation of Oil Body Proteins from the Endosymbiotic Symbiodinium」之初步成果：研究中主要探討與珊瑚共生的共生藻(Symbiodinium)其內部富含有油體(oil body)，藉由特殊的化學藥劑，可以成功分離動物及藻類細胞，進而純化藻類細胞。經純化及蛋白質分析鑑定出共生藻油體上特有的油體蛋白質，並推測這些油體蛋白質與油脂的儲存，能量的傳遞上扮演重要的角色。經口頭報告及與其他專家學者交換研究心得，探討其內部共生藻油體的組成及油體蛋白質的種類，進一步推測其油體蛋白質在與珊瑚進行內共生下的主要功能，及傳遞光合作用產物在宿主珊瑚及共生藻之間。

筆者多年來致力於植物油體的研究及主要蛋白質的功能性分析，於 23 日透過發表演說的方式，引起與會專家熱烈討論，提供各種經驗及看法受益良多，此研討會呈現

主辦單位在規劃研究主題進展、促進腦力激盪與強化研究成果分享溝通討論的用心與多樣化。

24 日早上的會議主要是探討有關於藻類生理學及藻類細胞發育及演化上的課題。首先來自韓國海洋大學的 Dr. Yongsik Sin 教授開始針對水庫浮游植物長期變化來探索其環境對藻類生物的長期性影響。緊接著，則陸續有來自各國的專家學者，探討遠古藻類及現生藻類的演化過程。藉由，聆聽各個領域的學者對研究上的成果的演說，讓與會的各位參加者對於藻類的各項研究進展有相當程度的了解。

25 日筆者則由台北松山國際機場返回屏東海洋生物博物館。

三、參加會議之心得與感想

整個會議過程中探討了許多跟藻類生理生態，脂質代謝相關的新知和研究，在整個會議的過程中，向相關領域的學者討論各自的研究成果，讓彼此之間的學術交流。本次會議也在藻類分子生物學議題中發表目前所進展的研究成果，也由於研討會中屬於相關領域的學者，藉由他們的踴躍提出各項問題而相互討論，激發出自己更多的創新研究方向及想法。整個參與會議的過程也讓我對於此相關研究，目前的進展有更深入的了解及認識。更進一步也因為參加此國際會議增加了與國際之間其他相關研究交流的機會，也增長了許多見聞，獲益良多。

四、建議事項：

1. 建議國內各領域學門應多主辦國際學術研討會議，促使臺灣的科學研究發展多邀請國際間重量級研究學者來訪並讓臺灣的研究與人文推廣至國際間。
2. 在國際的研討會中，也希望國內的相關單位能提供更多的資源，促進國內的學術品質及各種知識的經驗分享。

五、攜回資料：

The 2nd Annual International Congress of Algae-2013 研習會論文摘要。



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BIT's 2nd Annual World Congress of Ocean-2013

主题：资源、经济、增长

Theme: Economy, Resources and Growth

时间：2013年9月23-25日
Time: September 23-25, 2013

地点：杭州宝盛水博园大酒店
Venue: Hangzhou Blossom Water Museum Hotel

平行会议 Parallel Meetings



2013 第二届国际渔业大会

BIT's 2nd Annual World Congress of Mariculture and Fisheries-2013



2013 第二届国际藻业大会

BIT's 2nd Annual International Congress of Algae-2013



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BIT's 3rd Annual World Congress of Marine Biotechnology-2013



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China Algae Industry Association

中国藻业协会

China Algae Industry Association (CAIA, formerly China Seaweed Industry Association) which was established on March 31, 1989, is an algae farming, processing, distribution and utilization of enterprise-related research institutions, extension services units, as well as management and technical personnel voluntarily results into national, industry, and non-profit social organization. CAIA contains approximately 600 memberships.

Association purpose is to "promote the construction of industrial organization of algae, increase industrial market operation ability; strengthen communication and coordination with the industry to promote industrial rational allocation of resources; construct industry technology innovation platform to improve the level of industrial technology; comprehensively enhance the quality and competitiveness of the industry, and increase industrial, economic, social and ecological benefits."

Main Missions:

- (1) Carry out industrial policy research and formulation of industry standards and regulations.
- (2) Strengthen communication, coordination, and good self-discipline.
- (3) Establish an information platform to provide technical information services.
- (4) Give motivation to "research and Study" jointly to promote the industry technological innovation.
- (5) Implement trade promotion and expand consumer market.
- (6) Organize exchange activities, and create opportunities for vertical and horizontal cooperation.

CAIA sincerely hope that international algae counterparts can strengthen cooperation and communication with us, to make global algae industry a better future!

中国藻业协会（原中国海藻工业协会，1989年3月31日成立），是由藻类养殖、加工、流通和综合利用企业，相关科研院所、技术推广服务单位，以及管理和技术人员自愿结成的全国性、行业性、非营利性社会组织。全部会员约600家。

协会宗旨是“推进藻类产业组织化建设，提高产业市场化运作能力；加强行业沟通与协调，促进产业资源合理配置；建设产业技术创新平台，提高产业科技水平；全面提升产业素质和竞争能力，增加产业经济效益、社会效益和生态效益”。

主要任务：

- (1) 开展产业政策研究，制订行业规范。
- (2) 加强沟通协调，做好行业自律。
- (3) 建立信息平台，开展技术信息服务。
- (4) 推动“产学研”联合，促进行业科技创新。
- (5) 实施行业宣传，拓展消费市场。
- (6) 组织交流活动，创造纵向和横向合作机会。

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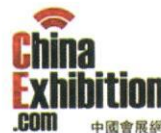
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Welcome Remark

Dear Friends and Colleagues,

Welcome to Hangzhou and BIT's 2nd Annual World Congress of Ocean-2013 (WCO-2013), the world's leading conference in ocean science, engineering, technology and management. With the theme of 'Economy, Resources and Growth', a particularly rich technical program will offer you a whole picture in Ocean Sciences & Industry. Under the auspices of Information Research Center of International Talent, China State Administration of Foreign Experts Affairs, China Fisheries Association, China Algae Industry Association, China Recreational Angling Association, China Shipowners' Association and China Association of the National Shipbuilding Industry, five parallel conferences have been arranged with the annual event, which include:

BIT's 2nd Annual World Congress of Mariculture and Fisheries

BIT's 2nd Annual International Congress of Algae

BIT's 3rd Annual World Congress of Marine Biotechnology

BIT's 4th Annual Marine Tech Summit

This ocean conference seeks the views and creative ideas of international professional community in addressing ocean and coastal resource management issues in the world. The program presents the most recent advances in the fields of Ocean covering a broad spectrum of hot topics that are of interest to the general and multi-disciplinary and audience. All these presentations identify or offer solutions to problems, utilize case studies, identify knowledge gaps or collaborations opportunities, and discuss broader applications and implications of current breakthroughs in science, engineering and new regulations or standards.

WCO-2013 includes plenary sessions, panel discussion, paper presentations, poster sessions, workshops, and exhibits. The social gatherings also help fostering a fruitful exchange of information and ideas.

Finally, we hope WCO-2013 will contribute to your professional and business development, I wish all of you have a successful meeting in Hangzhou, China.

Xiaodan Mei, Ph.D.
Executive Chair of WCO-2013
President
BIT Congress Inc.



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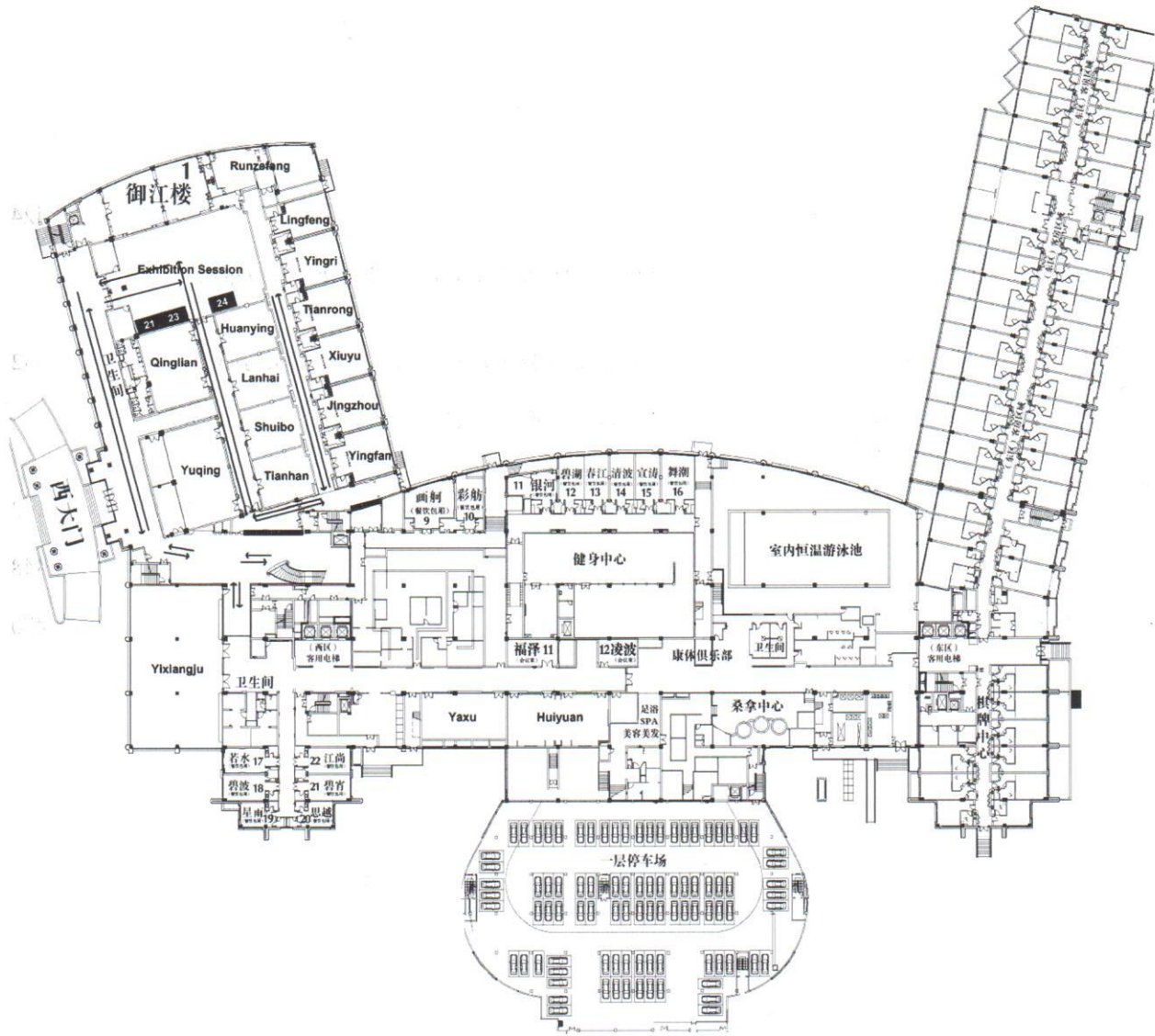
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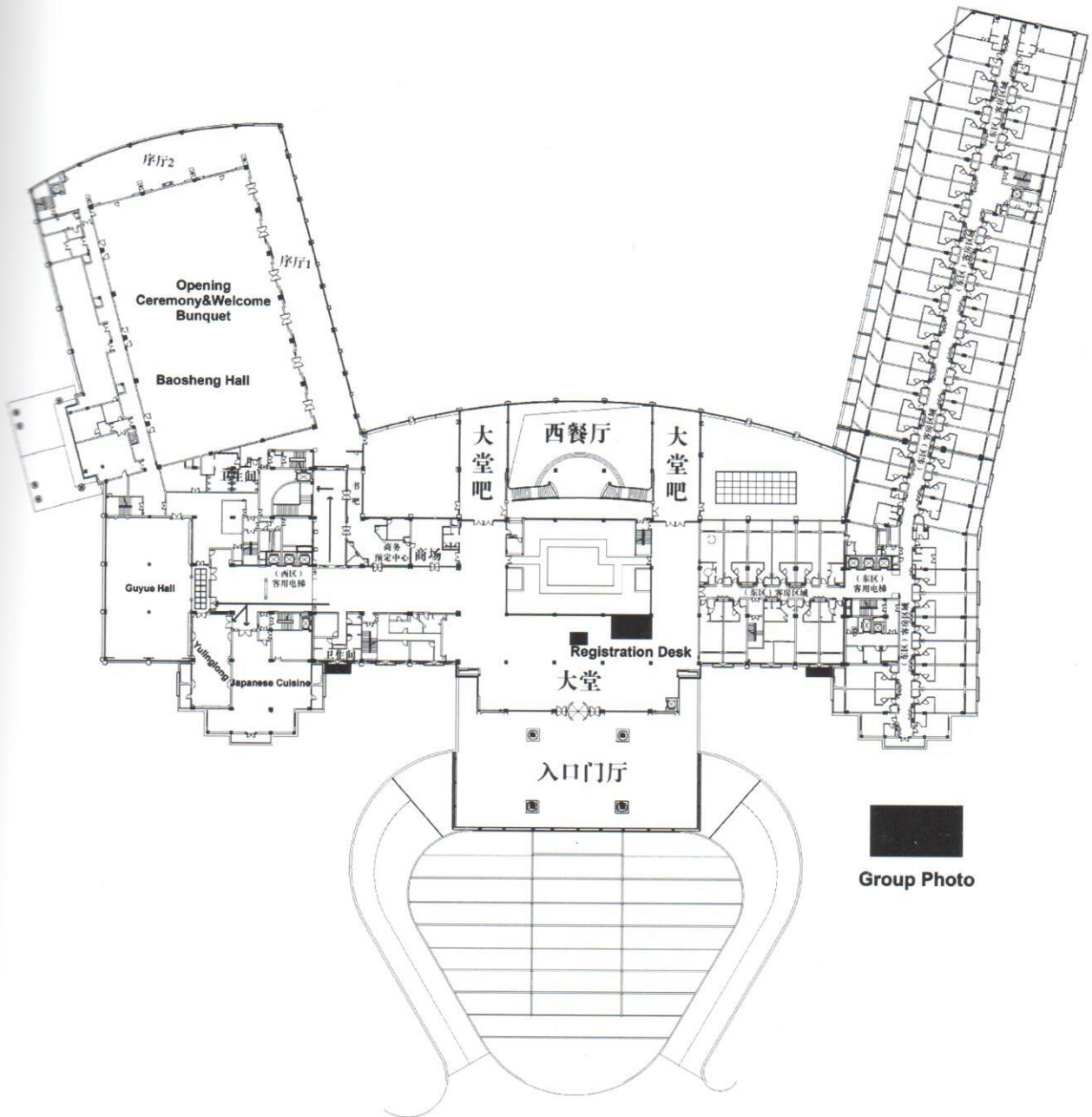
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The First Floor Plan of Blossom Water Museum Hotel





The Second Floor Plan of Blossom Water Museum Hotel





Event Schedule

Time: September 23-25, 2013
 Venue: Blossom Water Museum Hotel, China

Date & Time	Activities				
September 22, 2013 08:00-18:00	Registration (Place: Lobby, 2F, Blossom Water Museum Hotel)				
September 23, 2013 08:40-08:50	Group Photo (Place: The Southeast Outside, the Main Entrance of the Hotel)				
September 23, 2013 09:00-12:05	Opening Ceremony & Keynote Forum (Place: Baosheng Hall, 2F, Blossom Water Museum Hotel)				
September 23, 2013 18:30-20:30	Welcome Banquet (Place: Baosheng Hall, 2F, Blossom Water Museum Hotel)				
	WCO-2013	WCMF-2013	AICA-2013	WCMB-2013	MTS-2013
September 23, 2013 13:30-17:30	Track 1 (Qinglian, 1F) Track 2-1 (Yuqing, 1F) Track 3 (Huanying, 1F)	Track 1 (Yingfan, 1F)	Track 100,101 (Runzefang, 1F) Track 200 (Lingfeng, 1F) Track 300 (Yingri, 1F) Track 400,401 (Tianrong, 1F)	Track 1-1,1-2 (Shuibo, 1F) Track 2-1 (Tianhan, 1F) Track 2-2,2-3 (Xiuyu, 1F) Track 3 (Jingzhou, 1F)	Track 1 (Lanhai, 1F)
September 24, 2013 08:30-12:00	Track 2-2 (Huiyuan, 1F) Track 2-3 (Yaxu, 1F) Track 4 (Yaxu, 1F)	Track 2 (Yulinglong, 2F)	Track 102 (Lingfeng, 1F) Track 500 (Yingri, 1F) Track 600 (Tianrong, 1F)	Track 1-3,1-4 (Shuibo, 1F) Track 4 (Tianhan, 1F)	Track 2 (Japanese Cuisine, 2F)
September 24, 2013 13:30-17:30	Track 5 (Yaxu, 1F) Track 6 (Huiyuan, 1F)	Track 3 (Yulinglong, 2F)	Track 402 (Lingfeng, 1F) Track 700 (Yingri, 1F) Track 800 (Tianrong, 1F)	Track 2-4 (Shuibo, 1F) Track 5 (Tianhan, 1F)	Track 3 (Huanying, 1F)
September 25, 2013 08:30-12:00	N/A	Track 4 (Shuibo, 1F) Track 5 (Tianhan, 1F)	Plenary Lectures of AICA & WCMB (Yixiangju, 1F)		N/A
September 25, 2013 13:30-17:30	N/A	N/A	Track 103,104 (Lanhai, 1F) Track 403 (Tianhan, 1F) Track 404 (Yuqing, 1F)	Track Young (Shuibo, 1F)	N/A
Note:	1F=1 st Floor; 2F=2 nd Floor BIT's 2 nd Annual World Congress of Ocean-2013 (WCO-2013) BIT's 2 nd Annual World Congress of Mariculture and Fisheries-2013 (WCMF-2013) BIT's 2 nd Annual International Congress of Algae-2013 (AICA-2013) BIT's 3 rd Annual World Congress of Marine Biotechnology-2013 (WCMB-2013) BIT's 4 th Annual MarineTech Summit-2013 (MTS-2013)				



**BIT's 2nd Annual International Congress of
Algae-2013**

Time: September 23-25, 2013

Venue: Hangzhou Blossom Water Museum Hotel, China



Title: Isolation of Oil Body Proteins from the Endosymbiotic Symbiodinium

Dr. Pei-Luen Jiang

Assistant Professor

National Museum of Marine Biology and Aquarium
Taiwan

Abstract

Intracellular oil bodies became a major key role focus in elucidating the physiological function in the mutualistic endosymbiosis between reef-building corals and their dinoflagellate endosymbionts (genus Symbiodinium). The molecular mechanism that regulates this association remains the mystery. The aim of this research is to investigate and identify oil body proteins in the Symbiodinium sp. from *Euphyllia glabrescens*. The Symbiodinium was purified from the host gastrodermal cells by N-acetylcysteine (NAC) and Percoll discontinuous gradient centrifugation. The oil bodies (0.5-1 μm in diameter) were isolated from the endosymbiotic Symbiodinium and indicated by using fluorescent probes (Nile Red and BODIPY 493/503). Protein extracts from the oil body revealed two enriched protein bands were identified by mass spectrometric analyses.

Biography

Dr. Pei-Luen Jiang is an Assistant Professor in the School of National Dong Hwa University and the Assistant Researcher of National Museum of Marine Biology and Aquarium of excellence for oil body studies. She completed her Ph.D. at the National Chung Hsing University (NCHU) in Taiwan on studies with the oil body in plants. Her post-doctorate fellows studies at NCHU, Taiwan, on oil production by green algae. In 2010 she came to the National Museum of Marine Biology and Aquarium, where she make the research about "Cellular and Molecular Biology of Coral-Dinoflagellates Eendosymbiosis". Her special interests are in biology, lipid metabolism and biotechnology of marine microalgae. Prof. Jiang has supervised some of student mostly on aspects related to marine unicellular algae and the lipid products.