



Review

Create new research directions in comparative endocrinology from Asia and Oceania

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ABSTRACT

The Asia and Oceania Society for Comparative Endocrinology (AOSCE) was founded in 1987, when the first congress was held in Nagoya, Japan. The purpose of the AOSCE is to progress scientific activities in the field of comparative endocrinology in Asia and Oceania and to establish a deep relationship among the members. For this purpose, the AOSCE holds a congress or an intercongress symposium every 2 years, which organizes an attractive scientific program covering the latest progress in the broad aspect of comparative endocrinology. 2012 was the 25th anniversary of AOSCE. Our scientific activities have increased dramatically during the past 25 years. The 7th AOSCE congress was held in Kuala Lumpur, Malaysia in 2012. The theme of this congress was “Overcoming challenges in the 21st century”. To overcome challenges in the 21st century, we further need to create new research directions in comparative endocrinology from Asia and Oceania. This paper describes a brief history of the AOSCE and also highlights the discovery of gonadotropin-inhibitory hormone (GnIH) and the progress of GnIH research as one of new research directions in comparative endocrinology. In 2000, GnIH was discovered in Japan and now more than 50 laboratories are working on GnIH in the world. The discovery of GnIH has changed our understanding about regulation of the reproductive axis drastically in the past decade.

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1. Introduction

The 7th Congress of the Asia and Oceania Society for Comparative Endocrinology, AOSCE, was held in Kuala Lumpur, Malaysia, 3–7 March 2012. This year was the 25th anniversary of AOSCE. Scientific activities of the AOSCE have increased dramatically during the past 25 years by the contribution of many excellent comparative endocrinologists in Asia and Oceania. To keep growing the AOSCE, we need to create new research directions in comparative endocrinology from Asia and Oceania. At the celebration of the 25th anniversary of AOSCE, I as the current President will describe a brief history of the AOSCE and also highlight the discovery of gonadotropin-inhibitory hormone (GnIH) and recent progress in GnIH studies as one of new research directions in comparative endocrinology.

2. Historical view of development of the Asia and Oceania Society for Comparative Endocrinology (AOSCE)

The idea for having a society of comparative endocrinologists in Asia and Oceania was first discussed at the 10th International

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Symposium for Comparative Endocrinology at Copper Mountain, Colorado, United States in 1985. Only a few domestic scientific societies for comparative endocrinology existed in Asia and Oceania at that time, and an international society for comparative endocrinology to provide a forum to discuss advances in all aspects of comparative endocrinology and to encourage international collaboration was needed in Asia and Oceania region. Hence the AOSCE was founded in November, 1987, when the first congress was held in Japan. Susumu Ishii (Japan) became the first President of the AOSCE. John Y.-L. Yu (Taiwan) served as the 2nd President. Jean Joss (Australia), Samir Bhattacharya (India) and Hao-Ran Lin (China) were the 3rd, 4th and 5th Presidents, respectively.

The purpose of the AOSCE is to provide a forum for scientific activities in the field of comparative endocrinology in Asia and Oceania and to establish a deep relationship among the members. For this purpose, the society holds a congress or an intercongress symposium every 2 years, which organizes an attractive scientific program covering the latest progress in the broad aspect of comparative endocrinology. The AOSCE is affiliated with the journal “General and Comparative Endocrinology”.

As shown in Table 1, the first congress was held in Nagoya, Japan in 1987, when the AOSCE was formed. Hironori Ishizaki and Eiji Ohnishi organized this congress. The first intercongress symposium was held in Hong Kong in 1989. The organizer was Daniel Chan. The 2nd congress was held in New Delhi, India in 1991. The organizer was Rajendra N. Saxena. The 2nd intercongress symposium was

Table 1
AOSCE Congresses and Intercongress Symposia.

Congress	Venue	Year	Organizer(s)
1st Congress	Nagoya, Japan	1987	Hironori Ishizaki, Eiji Ohnishi
1st Intercongress Symposium	Hong Kong, China	1989	Daniel Chan
2nd Congress	New Delhi, India	1991	Rajendra N. Saxena
2nd Intercongress Symposium	Thailand	1993	Puttipongse Varavudhi
3rd Congress	Sydney, Australia	1996	Jean Joss
3rd Intercongress Symposium	Kwangju, Korea	1998	Hyuk-Bang Kwon
4th Congress	Taipei, Taiwan	2000	John Y.-L. Yu
4th Intercongress Symposium	Guangzhou, China	2002	Hao-Ran Lin
5th Congress	Nara, Japan	2004	Tadashi Oishi, Sakae Kikuyama
5th Intercongress Symposium	Bangkok, Thailand	2006	Prakong Tangpraputgul
6th Congress	Siliguri, India	2007	Samir Bhattacharya
6th Intercongress Symposium	Palmerston North, New Zealand	2010	John Cockrem
7th Congress	Kuala Lumpur, Malaysia	2012	Ishwar S. Parhar

held in Thailand in 1993. The organizer was Puttipongse Varavudhi. Jean Joss organized the 3rd congress that was held in Sydney, Australia in 1996. Hyuk-Bang Kwon organized the 3rd intercongress symposium in Kwangju, Korea in 1998. John Y.-L. Yu organized the 4th congress that was held in Taipei, Taiwan in 2000. Hao-Ran Lin organized the 4th intercongress symposium in Guangzhou, China in 2002. The 5th congress was held in Nara, Japan in 2004. This congress was organized by Tadashi Oishi and Sakae Kikuyama and held in conjunction with the annual meeting of the Japan Society for Comparative Endocrinology (JSCE). Prakong Tangpraputgul organized the 5th intercongress symposium in Bangkok, Thailand in 2006. Samir Bhattacharya organized the 6th congress that was held in Siliguri, India in 2007. John Cockrem organized the 6th intercongress symposium in Palmerston North, New Zealand in 2010. In 2012, we had the 7th AOSCE congress in Kuala Lumpur, Malaysia. Ishwar S. Parhar organized this congress. The latest progresses in the broad aspect of comparative endocrinology were discussed at these congresses and intercongress symposia.

In addition to the leadership of the past presidents, many outstanding comparative endocrinologists, such as Hideshi Kobayashi, Aubrey Gorbman, Rajendra N. Saxena, Daniel Chan, Tom Lam, Puttipongse Varavudhi, Hyuk-Bang Kwon, Yong-Dal Yoon, Prakong Tangpraputgul, Yoshitaka Nagahama, Hironori Ishizaki, Eiji Ohnishi, Tetsuya Hirano, Hiroshi Kawauchi, Sakae Kikuyama, Tadashi Oishi, Kiyoshi Shimada, Masaru Wada, Akihisa Urano, Yoshio Takei, and others contributed to the progress of the AOSCE in collaboration with the AOSCE members. Owing to the works of many excellent scientists, our scientific activities have increased dramatically during the past 25 years.

Currently, Kazuyoshi Tsutsui (President), John Cockrem (Secretary-General), Saumen Kumar Maitra (Secretary), Ishwar S. Parhar (Treasurer) and Kyungjin Kim (Auditor) are serving as the officers of the AOSCE. The following council members elected by each country are also serving the AOSCE: Australia: Bronwyn McAllan; China: Hao-Ran Lin, Song-Lin Chen; Hong Kong SAR: Anderson O. L. Wong; Iran: Bagher Amiri; India: Saumen Kumar Maitra, Shelley Bhattacharya, M. Michael Aruldas, Umesh Rai; Japan: Kazuyoshi Tsutsui, Sakae Kikuyama, Kaoru Kubokawa, Akiyoshi Takahashi; Korea: Hyuk-Bang Kwon, Kyungjin Kim, Jae Young Seong; Malaysia: Ishwar S. Parhar; New Zealand: John Cockrem; Philippines: Evelyn

Grace de Jesus-Ayson; Taiwan: Ching-Fong Chang; Thailand: Sukumal Chongthammakun, Suchinda Malaivijitnond.

To celebrate the 25th anniversary of AOSCE, the 7th AOSCE congress was held in Kuala Lumpur, Malaysia. Ishwar S. Parhar organized an attractive scientific program for this important meeting. Kazuyoshi Tsutsui (Japan) delivered the Presidential Lecture entitled “Create new research directions in comparative endocrinology from Asia and Oceania”. Kyungjin Kim (Korea) presented the first Plenary Lecture entitled “Biological rhythms in neuro/endocrine systems”. Samir Bhattacharya (India) gave the second Plenary Lecture entitled “Fetuin-A: A new member in insulin resistance pathway”. The third Plenary Lecture entitled “Evolution of the HPA/I axis: Was the melanocortin-2 receptor a magnificent blunder?” was given by the current Editor-in-Chief of “General and Comparative Endocrinology” Robert M. Dores (USA). John Cockrem delivered the fourth Plenary Lecture entitled “Individual variation in glucocorticoid stress responses in animals”. In addition to these lectures, Wei Ge (Hong Kong), Akiyoshi Takahashi (Japan), K. P. Joy (India), Takashi Yoshimura (Japan), Ishwar S. Parhar (Malaysia), Michiyasu Yoshikuni (Japan), Anderson O. L. Wong (Hong Kong), Jae Young Seong (Korea), Ching-Fong Chang (Taiwan), Narattaphol Charoenphandhu (Thailand), and Saumen Kumar Maitra (India) presented their State of the Art Lectures covering the latest progress in the broad aspect of comparative endocrinology. New findings and new insights in these lecturers have been described as reviews or mini-reviews in this volume. At this congress, many exciting oral and poster presentations were delivered by excellent scientists from Asia and Oceania region regarding reproductive endocrinology, evolutionary endocrinology, developmental endocrinology, environmental endocrinology, neuroendocrinology, molecular endocrinology, behavioral endocrinology, growth and metabolism and invertebrate endocrinology.

3. Creation of new research directions in comparative endocrinology from Asia and Oceania

The theme of the 7th AOSCE congress was “Overcoming challenges in the 21st century”. To overcome challenges in the 21st century, we need to create new research directions in comparative endocrinology from Asia and Oceania. As one of new research directions in comparative endocrinology, I describe a brief history of GnIH, a new neurohormone regulating vertebrate reproduction, and highlight the progress in GnIH research. GnIH was discovered in Japan in 2000 and now more than 50 laboratories are studying GnIH in the world. The discovery of GnIH has changed our understanding about regulation of the reproductive axis drastically in the past decade.

3.1. Discovery and evolutionary history of GnIH

Identification of novel neurohormones that regulate gonadotropin secretion is essential for the progress of reproductive endocrinology and neuroendocrinology. Since the discovery of the hypothalamic decapeptide, gonadotropin-releasing hormone (GnRH), in the brain of mammals at the beginning of 1970s [4,18], several other GnRHs have been identified in the brain of non-mammalian vertebrates [14,19,20,27,28]. Based on extensive studies in vertebrates, it was generally believed that GnRH is the only hypothalamic regulator of pituitary gonadotropin synthesis and release. In 2000, Tsutsui and colleagues discovered a novel hypothalamic neuropeptide that, in contrast to GnRH, actively inhibits gonadotropin release in quail and termed it gonadotropin-inhibitory hormone (GnIH) [37]. From the past 10 years of research, we now know that GnIH exists in all avian species studied, and regulates avian reproduction by decreasing gonadotropin re-

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