

## Symposium

📅 2025年9月28日(日) 14:50 ~ 16:20 🏢 Session Room 6 (Conference Room B)

## **[Symposium 105] Progress in biological signature and care for youth mental health crisis**

Moderator: Akitoyo Hishimoto (Kobe University Graduate School of Medicine)

[SY-105-01]

Progress in biological signature and care for youth mental health crisis

Akitoyo Hishimoto<sup>1</sup>, \*Ikuro Otsuka<sup>1</sup>, Tomoyuki Miyazaki<sup>2</sup>, Junichi Fujita<sup>3,4</sup>, Woraphat Ratta-apha<sup>5</sup>  
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[SY-105-02]

Genome biology of suicide

\*Ikuro Otsuka (Kobe University Graduate School of Medicine(Japan))

[SY-105-03]

Visualization of biological basis underlying adverse child experience by quantifying intra-brain AMPA receptor densities

\*tomoyuki miyazaki<sup>1</sup>, Ryo Sasaki<sup>2</sup>, Masashige Shuto<sup>2</sup>, Tsuyoshi Eiro<sup>2</sup>, Takeshi Asami<sup>2</sup> (1.Center for Promotion of Research and industry-Academic Collaboration, Yokohama City University(Japan), 2.Department of psychiatry, Yokohama City University(Japan))

[SY-105-04]

Implementation and Evaluation of Metaverse-Based Mental Health Services for Youth

\*Junichi Fujita<sup>1,2</sup>, Mio Ishii<sup>1,2</sup>, Tomoyuki Miyazaki<sup>3</sup> (1.Department of Child Psychiatry, Yokohama City University Hospital(Japan), 2.Department of Psychiatry, Yokohama City University School of Medicine(Japan), 3.Center for Promotion of Research and Industry-Academic Collaboration, Yokohama City University(Japan))

[SY-105-05]

Mental Health Trends in Thailand: Emerging Problems and Challenges in a Changing Society

\*Woraphat Ratta-apha (Faculty of Medicine Siriraj Hospital, Mahidol University(Thailand))

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### [SY-105-01] Progress in biological signature and care for youth mental health crisis

Akitoyo Hishimoto<sup>1</sup>, \*Ikuo Otsuka<sup>1</sup>, Tomoyuki Miyazaki<sup>2</sup>, Junichi Fujita<sup>3,4</sup>, Woraphat Rattapha<sup>5</sup> (1.Kobe University Graduate School of Medicine(Japan), 2.Center for Promotion of Research and industry-Academic Collaboration, Yokohama City University(Japan), 3.Department of Child Psychiatry, Yokohama City University Hospital(Japan), 4.Department of Psychiatry, Yokohama City University School of Medicine(Japan), 5.Faculty of Medicine Siriraj Hospital, Mahidol University(Thailand))

キーワード：Youth mental health、Suicide、Biomarker、AMPA-PET、Metaverse

Mental health among young people is in a crisis, with the number of youth suicides increasing worldwide. By taking advantage of one of the world's largest genome/epigenome data of young suicides and the world's first in-vivo human brain AMPA-PET technology, the speakers in this symposium successfully discovered new preliminary findings, such as accelerated biological aging and an aberrant increase in AMPA receptor density throughout the brain in young people exposed to abuse and suicide risk. The speakers are also working on a project to recover the mental health of young people at risk of mental health through new care platforms such as “metaverse schools”. This symposium will also introduce the current state of youth mental health in Thailand, and will develop a discussion from a global perspective that goes beyond Japan.

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### **[SY-105-02] Genome biology of suicide**

\*Ikuo Otsuka (Kobe University Graduate School of Medicine(Japan))

キーワード : Suicide、Genetics、Epigenetics、Somatic mosaicism

We have the largest DNA samples from suicide decedents in Asia, and we experimentally demonstrated the existence of strong polygenic effects for suicide through polygenic risk score (PRS) analysis for the first time (Otsuka et al., *Neuropsychopharmacology* 2019). In addition, through the activities of the International Suicide Genome Consortium, which was launched for the first time in the world around the same time, we have scaled up "suicidal behavior GWAS" including suicide attempters, and performed polygenic structure mapping by dividing "suicide death" and "non-fatal suicide attempt" (Otsuka et al., *Psychol Med* 2023; International Suicide Genetics Consortium, *Am J Psychiatry* 2023). On the other hand, so far, the analysis focusing only the above genome sequence information can only explain a small part of the suicide biology. From this, we think that the biological process that leads people to suicide may be more closely related to "acquired genome changes" influenced by various stresses people experience in their lives than to "risks inherent in genome sequence information." We also outline our findings such as abnormal telomere shortening and aberrant epigenetic age acceleration in young suicides, and mosaic chromosomal alterations in suicide (Otsuka et al., *Sci Rep* 2017; Okazaki, Otsuka et al., *Prog Neuropsychopharmacol Biol Psychiatry* 2020; Otsuka et al., *Mol Psychiatry* 2024).

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### **[SY-105-03] Visualization of biological basis underlying adverse child experience by quantifying intra-brain AMPA receptor densities**

\*tomoyuki miyazaki<sup>1</sup>, Ryo Sasaki<sup>2</sup>, Masashige Shuto<sup>2</sup>, Tsuyoshi Eiro<sup>2</sup>, Takeshi Asami<sup>2</sup>  
(1.Center for Promotion of Research and industry-Academic Collaboration, Yokohama City University(Japan), 2.Department of psychiatry, Yokohama City University(Japan))

キーワード：Adverse Child Experience、Neuroimaging、AMPA receptor

Many studies have shown that adverse experiences in childhood (such as abuse, poverty, and domestic discord) have a profound impact on the brain throughout life. These studies include approaches to brain structure and brain function, and it is known that adverse experiences induce physical and functional abnormalities. Such changes are suggested to cause impaired memory and learning abilities, as well as difficulties in emotional regulation, while also being considered a contributing factor to various mental disorders such as depression, anxiety disorders, and PTSD. On the other hand, there are cases where individuals who have experienced similar adversities do not develop such disorders, and evidence regarding such resilience is scarce. To address these issues, we are conducting research to advance the development and social implementation of “biological markers that visualize the risk of abuse and suicide in children and young people, as well as their recovery.” Specifically, we are using human in vivo AMPA receptor visualization technology (a positron emission tomography tracer) to clarify the biological mechanisms that define stress and resilience resulting from adverse experiences (jRCTs031230715). To date, we have performed AMPA-PET imaging on participants aged 20–34 with a history of childhood abuse (both those with and without a history of suicidal behavior) to measure AMPA receptor density in the brain. At this symposium, we aim to present such concrete examples and discuss the biological foundations of adverse experiences and the evidence for resilience.

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### **[SY-105-04] Implementation and Evaluation of Metaverse-Based Mental Health Services for Youth**

\*Junichi Fujita<sup>1,2</sup>, Mio Ishii<sup>1,2</sup>, Tomoyuki Miyazaki<sup>3</sup> (1.Department of Child Psychiatry, Yokohama City University Hospital(Japan), 2.Department of Psychiatry, Yokohama City University School of Medicine(Japan), 3.Center for Promotion of Research and Industry-Academic Collaboration, Yokohama City University(Japan))

キーワード : Youth mental health、Virtual reality、Digital music therapy、Telemental health innovation

Clinical testing of metaverse-based mental health services examined psychiatric consultation and music therapy modalities. Psychiatric consultations (n=26, ages 16-25) through VRChat® and WorkRooms® demonstrated 76% satisfaction among participants, effectively serving individuals with social anxiety, sensory sensitivities, and mobility challenges. Technical limitations manifested in VR goggle discomfort (44.4%) and audio latency (37.0%). Music therapy assessment, conducted across two virtual environments under professional supervision, revealed significant constraints in delivering traditional therapeutic interventions due to audio synchronization issues, limiting effectiveness to non-rhythmic musical experiences. The platform shows promise for psychiatric consultations while highlighting current technological barriers to comprehensive music therapy implementation. These findings inform future development of virtual mental health services, particularly regarding audio-dependent therapeutic modalities.

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### **[SY-105-05] Mental Health Trends in Thailand: Emerging Problems and Challenges in a Changing Society**

\*Woraphat Ratta-apha (Faculty of Medicine Siriraj Hospital, Mahidol University(Thailand))

キーワード：mental health、suicide、addiction

Mental health is becoming an increasingly critical issue in Thailand, with rising cases of psychiatric disorders and addiction. Recent trends indicate a growing awareness of mental health, but significant challenges remain in addressing these concerns effectively. One of the most alarming trends is the increase in mental health disorders, particularly among adolescents. Academic pressure, social media addiction, and the lingering effects of the COVID-19 pandemic have all contributed to stress and emotional distress. Many students and working professionals report high levels of burnout, affecting their overall well-being. Another major concern is suicide rates, which remain among the highest in Southeast Asia. Financial stress, social isolation, and untreated mental health conditions are key contributing factors. Despite the availability of mental health hotlines, many individuals still struggle to access the support they need. The rise in addiction-related mental health issues is also alarming. Substance abuse, gaming addiction, and excessive social media use are affecting mental well-being, particularly among youth. Cannabis legalization has further complicated the situation, with increasing reports of cannabis misuse, particularly among young adults. Although intended for medical and economic benefits, widespread recreational use has led to concerns about dependency, psychosis, and physical complications. The easy availability of drugs and alcohol exacerbates the problem. Despite growing mental health awareness, Thailand faces several challenges. There is a shortage of mental health professionals, particularly in rural areas. Additionally, access to mental health services remains limited, making it difficult for many individuals to receive timely treatment. To improve mental health outcomes, Thailand needs policy reforms, expanded mental health services, and better education programs. Addressing addiction issues and strengthening regulations on cannabis use will be essential in ensuring long-term mental well-being in society.