Symposium | Art：[Symposium 105] Progress in biological signature and care for youth mental health crisis

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

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

[SY-105-02] Genome biology of suicide

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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).