Depression Clinical and Translational Research Center

Director
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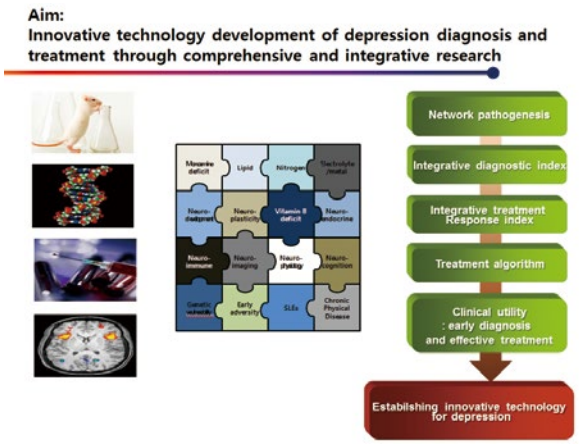
Major research goals

Depression is common and associated with significant burden globally. However, treatment response is low with conventional antidepressants. To overcome the unmet needs, our center aims to develop innovative technologies in depression pathogenesis and treatment guideline with comprehensive clinical and translational investigations with the government support(Ministry of Health).



Major research topics

- Investigate network-form pathogenesis and develop integrative diagnostic biomarkers through comprehensive researches on depression
- Develop integrative treatment response indices and a treatment algorithm through short-, mid- and long-term clinical trials
- Establish convergent biomarkers by combining diagnostic, therapeutic markers and brain imaging findings
- Suggest hypothesis for clinical researches based on the findings from molecular biological mechanism through animal experiments
- Ensure the innovative techniques for diagnosis and treatment of depression.

Major achievements

1. Significant interactions of stressful life events (SLEs) with both serotonin transporter gene linked promoter region(5-HTTLPR) and brain-derived neurotrophic factor(BDNF) genotypes were observed on risk of depression. Furthermore, a significant three-way interaction between

5-HTTLPR, BDNF, and SLEs was also found. These findings suggest that environmental risk of depression is modified by at least two genes and that gene–environment interactions are found even into old age.

2. Lower levels of folate and vitamin B12 and higher homocysteine levels at baseline were associated with a higher risk of incident depression at follow-up in Korean elders. Our findings in this prospective community study support roles for folate, vitamin B12 and homocysteine levels in the aetiology of late-life depression.
3. Pre-existing heart disease, incident stroke and lower baseline high-density lipoprotein cholesterol level were significantly associated with incidence of late-life depression, independently of disability and cognitive function. These results provide some support for a vascular aetiology of late-life depression.
4. Higher BDNF methylation was independently associated with the prevalence and incidence of depression and severe depressive symptoms in late-life.

Representative figures of major achievements

Significant interactions of SLEs with both 5-HTTLPR s/s and BDNF met/met genotypes were observed on risk of depression in Korean community elderly.

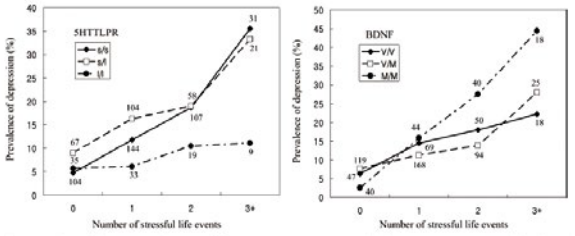


Figure 1. Prevalance of depression according to stressful life events, serotonin transporter gene linked promoter region (5-HTTLPR), and brain-derived neurotrophic factor (BDNF) genotypes in the baseline sample. Cell sizes are given for each genotype/stressful life event combination.

Major relevant publications

1. Kim J-M, Stewart R, Kim S-W, et al. Interactions between life stressors and susceptibility genes(5-HTTLPR and BDNF) on depression in Korean elders. Biol Psychiatry 2007:62:423-428.
2. Kim J-M, Stewart R, Kim S-W, et al. Predictive value of folate, vitamin B12 and homocysteine levels in late-life depression. Br J Psychiatry 2008:192:268-274.
3. Kim J-M, Stewart R, Kim S-W, et a. Physical health and incident late-life depression: modification by genes affecting cytokine function. Neurobiol Aging 2013:34:356.e1-356.e9
4. Kang H-J, Kim J-M, Bae K-Y, et al. Longitudinal associations between BDNF promoter methylation and late-life depression. Neurobiol Aging 2015:36:1764.e1-e7.
5. Kang H-J, KimJ-M, Kim S-W, et al. Associations of cytokine genes with Alzheimer's disease and depression in an elderly Korean population. Journal of Neurology Neurosurgery & Psychiatrey 2015:86:1002-1007.

Research networks