

Research Topic	Molecular mechanism of stress response in HPA axis and its applied to pain research	Graduate School of Engineering
Host University	Western University / London, Ontario / Canada	Applied Chemistry, Environmental and Biomedical Engineering
Duration	From August 27 to October 31, 2019	KAWAGOSHI Ai

Summary of the Research Activities

Stress necessitates an immediate engagement of multiple neuronal and endocrine system. Stress response is regulated by corticotropin releasing hormone (CRH), adrenocorticotrophic hormone (ACTH), and cortisol through the hypothalamic-pituitary-adrenal (HPA) axis [Fig1].

In this research, I analyzed neuron- or glia-specific CRH mRNA expression under the stress condition by using tagged ribosomal subunits (RiboTag). RiboTag method allows for immunoprecipitation of ribosome-associated RNA from specific cells within complex tissues by expressing RiboTag in desired cell types. Cell type-specific promoter restricts the RiboTag expression. Transgenic mice expressing cell-specific RiboTag are established.

I performed RNA extraction from mouse hypothalamus by using Aurum Total RNA Fatty and Fibrous Tissue kit. Then, I synthesized cDNA by using High-Capacity cDNA Reverse Transcription kits. Expression of CRH mRNA was analyzed by using real-time PCR [Fig2]. CRH and internal control GAPDH mRNAs were detected by Real-time PCR, and the data are little variation within each three samples [Fig3].

I am planning to use the cell-specific gene expression analysis using RiboTag in my pain research.

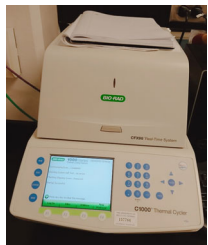


Fig2. Real-time PCR machine

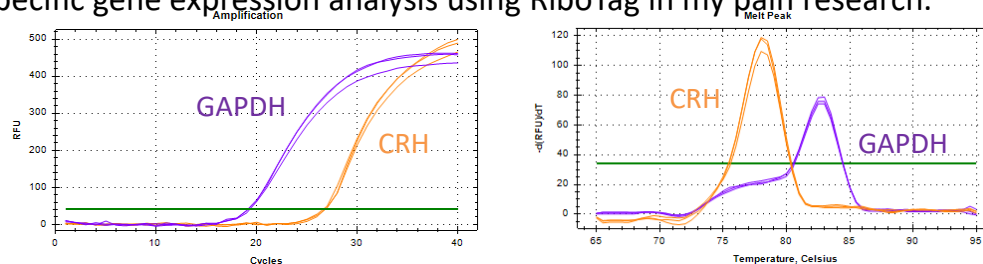


Fig3. Gene amplification curve and gene melting curve

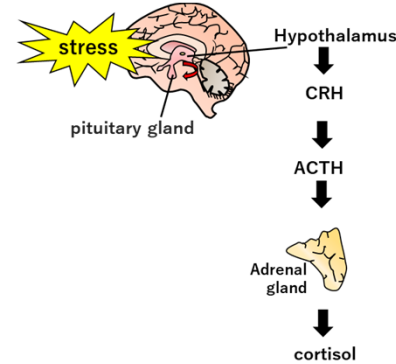


Fig1. Central stress response

College Life, Friends and Others

Western University is a Canadian state university with 11 faculties and 400 different specializations. People from different countries learned in the university, and therefore I was able to experience the culture of many countries. I made friends with the laboratory members, and we went to Toronto for sightseeing on a holiday.



指導教員講評

新しい研究手法の取得のため、研究室の方々と積極的にコミュニケーションをとり、実験に取り組んでいました。今後の研究の発展を期待しています。
指導教員氏名: 芦高 恵美子