Life Sciences Seminar

UNDERSTANDING MOOD DISORDERS: AN EMERGING ROLE FOR GLUN3A NMDAR SUBUNITS.

Luis García-Rabaneda
Instituto de Neurociencias (CSIC-UMH), San Juan de Alicante, Spain.

Host: Gaia Novarino

Mood and anxiety disorders are characterized by a persistent or disproportionate state of alarm that interferes with normal life, and affect more than 20% of the European population. Despite their prevalence, no rationale-based therapies are currently available. One important clue to identify new therapeutic targets is the comorbidity among different psychiatric disorders. For example, the circuits involved in substance abuse and addiction largely overlap with the ones thought to underlie anxiety. Of interest in this context are the non-conventional GluN3A subunits of NMDA-type glutamate receptors (NMDARS) which are highly expressed during critical periods of postnatal development. GluN3A subunits are principal modulators of network rewiring by early experience, which is known to shape adult emotional and affective behaviors, and mutations in GRIN3A (the gene encoding GluN3A) have been linked to nicotine, alcohol and cocaine addiction in adult individuals.To address whether altered GluN3A expression could modulate anxiety responses, we conducted a battery of behavioral tasks testing anxiety and depression in knockout mice lacking GluN3A (GluN3A KO) and transgenic mice that overexpress GluN3A beyond its physiological time window (GFP-GluN3A dt). Our analysis revealed a robust anxiolytic-like phenotype of adult mice that lack GluN3A expression (GluN3A KO). We further explored the consequences of altered GluN3A expression on the emotional and depressive features to sub-chronic stress and found that GluN3A KO mice are remarkably resilient to sub-chronic stress. Our results reveal putative new molecular targets to treat neurological disorders associated with depression and anxiety.

Tuesday, October 31, 2017 02:00pm - 03:00pm
Seminar Room, Lab Building East

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