



Department of Biotechnology  
Ministry of Science and Technology  
Government of India  
**DBT**



National Institute of  
Advanced Industrial Science  
and Technology  
**AIST**

# DBT - AIST International Laboratory for Advanced Biomedicine



**DAILAB**

**Classroom for Advanced & Frontier Education  
CAFE**

**DAILAB-CAFE**

## Series - 005

Date and Time - **Nov 17 (Monday), 4 - 5pm**

Venue - Central 4 (5F) Room 5105

Speaker - **MAHESH K. KAUSHIK**

Affiliation – International Institute for Integrative Sleep Medicine (WPI-IIS), University of Tsukuba, Japan

E-mail: [kaushikmk@gmail.com](mailto:kaushikmk@gmail.com)



### Title - Prostaglandin D<sub>2</sub>: role in seizure suppression and postictal sleep

Epilepsy is a neurological disorder with the occurrence of seizures, which are often accompanied by sleep. Prostaglandin (PG) D<sub>2</sub> is produced by hematopoietic or lipocalin-type PGD synthase (H- or L-PGDS) and involved in the regulation of physiological sleep. Here, we show that H-PGDS, L/H-PGDS or DP<sub>1</sub> receptor (DP<sub>1</sub>R) KO mice exhibited more intense pentylene-tetrazole (PTZ)-induced seizures in terms of latency of seizure onset, duration of generalized tonic-clonic seizures, and number of seizure spikes. Seizures significantly increased the PGD<sub>2</sub> content of the brain in wild-type mice. This PTZ-induced increase in PGD<sub>2</sub> was attenuated in the brains of L- or H-PGDS KO and abolished in L/H-PGDS KO mice. Postictal non-rapid eye movement sleep was observed in the wild-type and H-PGDS or DP<sub>2</sub>R KO, but not in the L-, L/H-PGDS or DP<sub>1</sub>R KO, mice. These findings demonstrate that PGD<sub>2</sub> produced by H-PGDS and acting on DP<sub>1</sub>R is essential for seizure suppression and that the L-PGDS/PGD<sub>2</sub>/DP<sub>1</sub>R system regulates sleep that follows seizures.



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**DAILAB-CAFÉ 005**  
**Dr. Mahesh Kaushik**



**BRI, Tsukuba**



**Brawijaya Univ  
Indonesia**

**Hanyang Univ,  
Seoul**

# Thank you !

Dear Dr Kaushik

*Thanks for being DAILAB-CAFE 005 mentor  
We all at BRI-Tsukuba, Hanyang Univ-Seoul, IIT-  
Delhi and Brawijaya Univ, Indonesia enjoyed your talk.  
Wishing you success for the sleep sacrifice you do for  
sleep research...  
From. ....DAILAB*