The essential but enigmatic functions of sleep must be reflected in molecular changes sensed by the brain’s sleep-control systems. Insights into these systems are beginning to reveal the physical nature of sleep pressure and the mechanisms responsible for its accumulation and discharge. These advances are a testament to the enabling power of optogenetics, whose early days the lecture recalls in a handful of personal vignettes.

Gero Miesenböck is an Austrian neurophysiologist and is known as the founder of optogenetics. He received his education at the University of Innsbruck and Umeå University in Sweden, and graduated from the University of Innsbruck Medical School in 1993. Miesenböck has received a great number of honors and awards including the Brain Prize, which he received in 2013, and in 2015 he was elected a Fellow of the Royal Society.