

DROPLET DIGITAL™ PCR (DDPCR™)

**BIO-RAD**

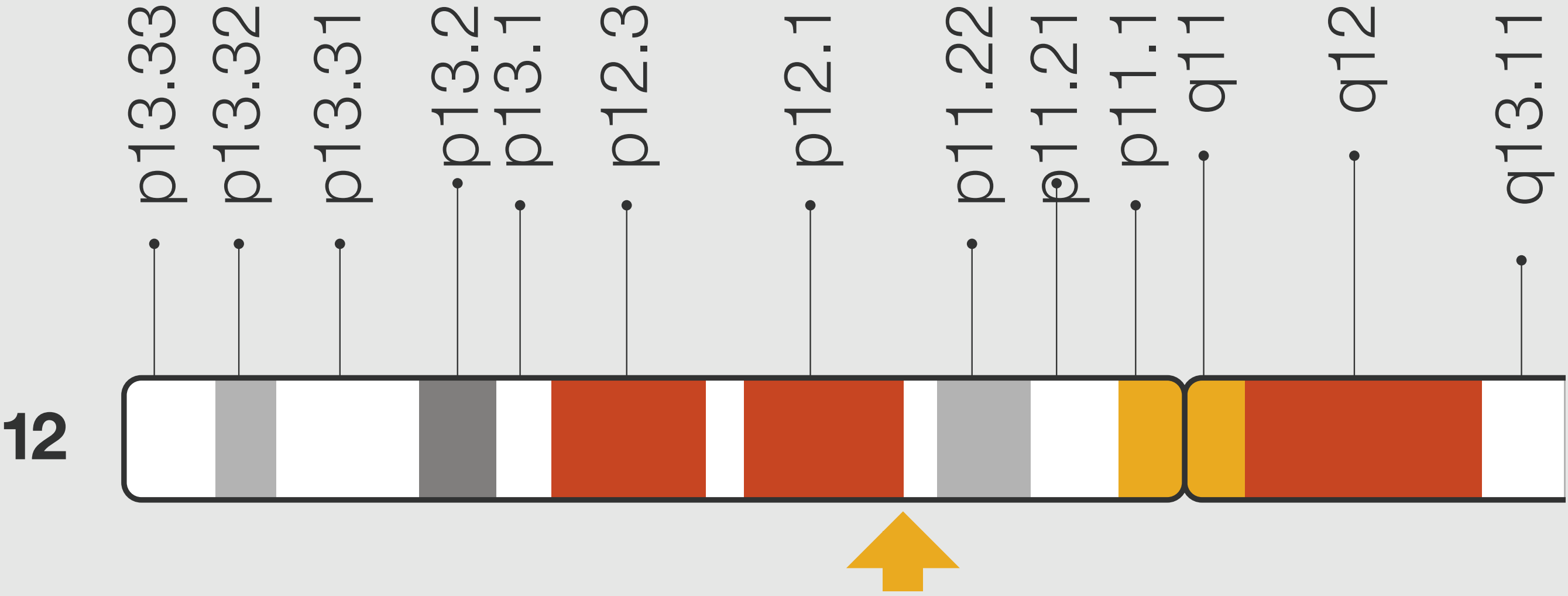


# What do *you* **Gene**

hDEC2

**Super Sleeper Gene**

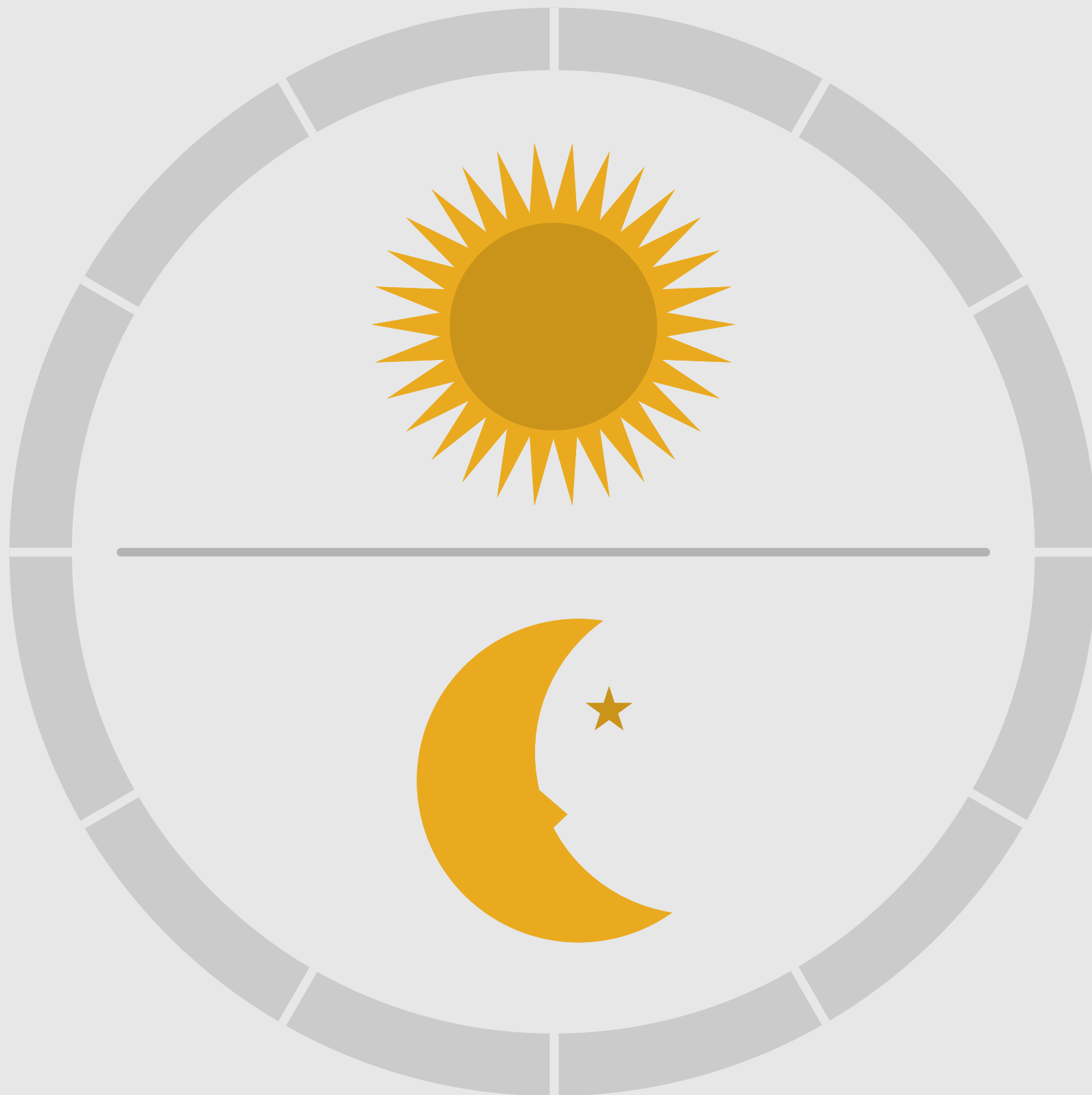
# WHAT IS IT?



A **transcriptional repressor** on chromosome 12

# WHAT IS IT?

Codes for the DEC2 protein that is **involved in circadian clock regulation.**



# WHAT IS IT?

DEC2 is part of a **basic helix-loop-helix protein family** that can dimerize with each other and affect transcription by directly binding to DNA.



# hDEC2 MUTATION AND SLEEP

In 2009, He et al. identified an **SNP mutation in the *hDEC2* gene** in a family that wakes up early.



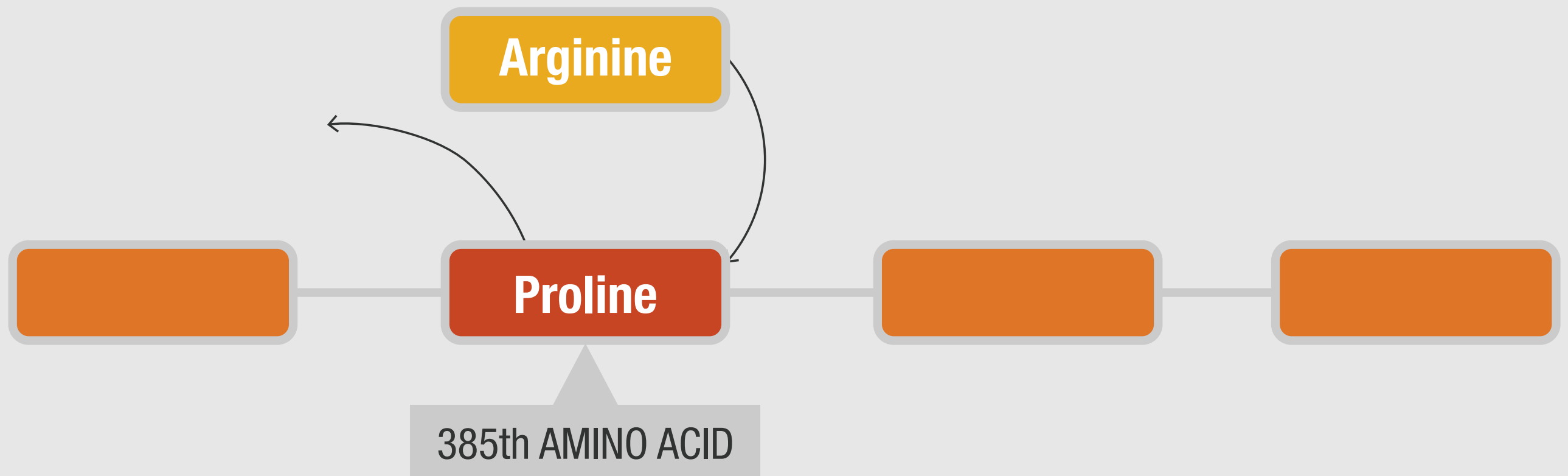
# hDEC2 MUTATION AND SLEEP

This SNP was **confirmed in a mouse model** with *hDEC2* instead of *mDEC2*.



# hDEC2 MUTATION AND SLEEP

An SNP in *hDEC2* causes a **switch from proline to arginine in the 385th amino acid** of the DEC2 protein.



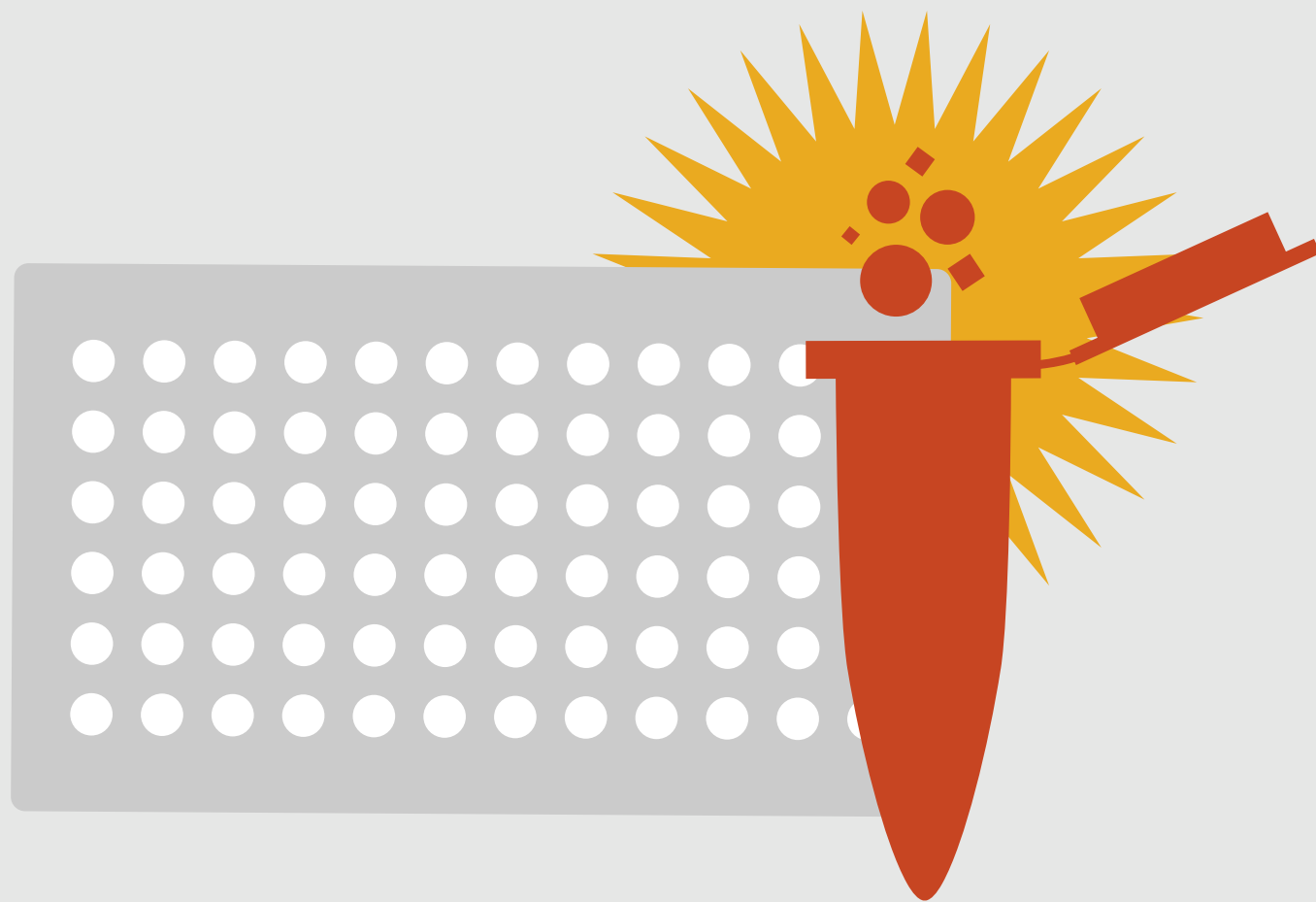
# hDEC2 MUTATION AND SLEEP

Individuals with an SNP mutation in *hDEC2* have **shorter daily sleep times than normal individuals** throughout their lifetime.





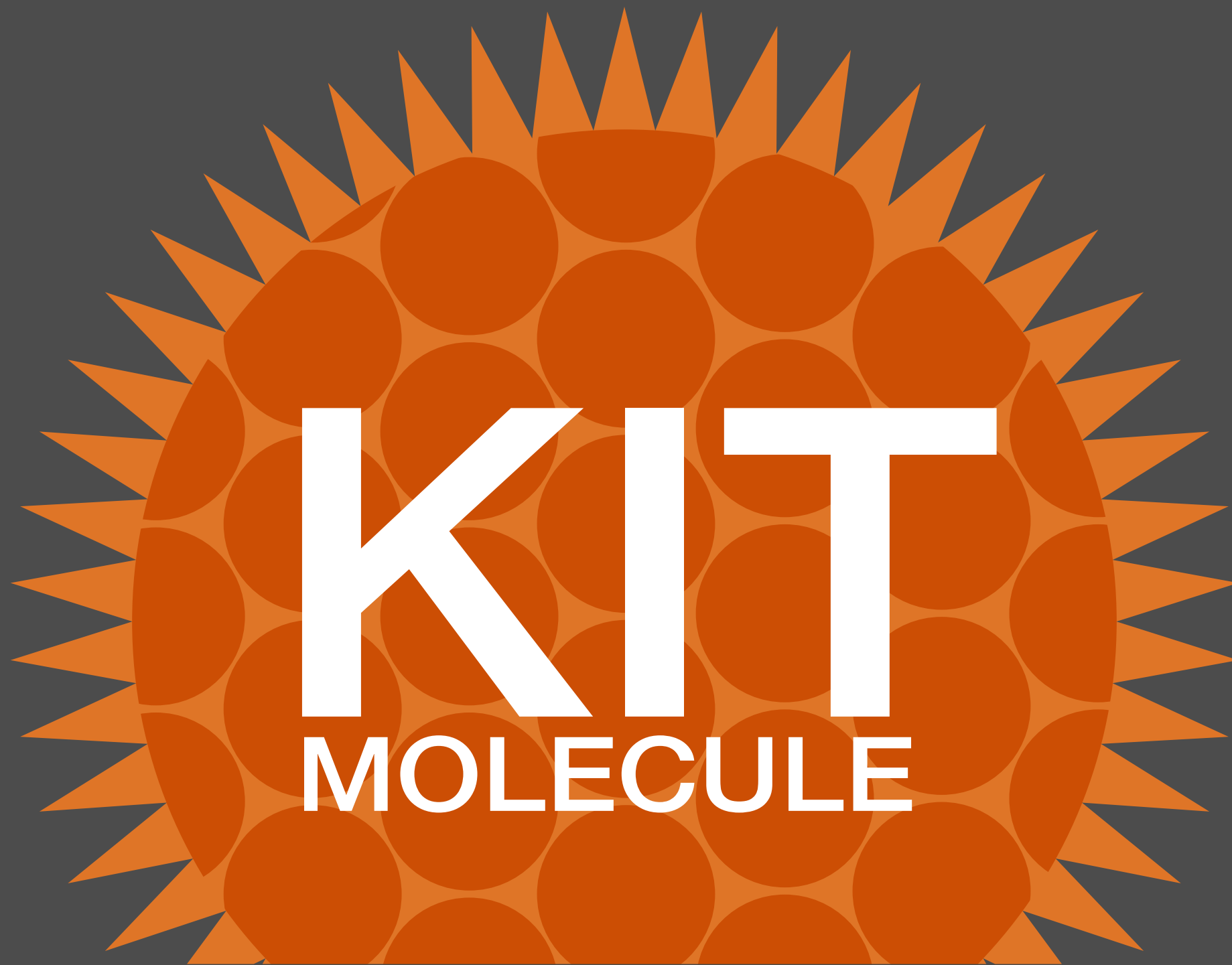
# hDEC2 IN THE LITERATURE



**New and exciting**  
area of research

**2 publications**  
as of March 2018





## DROPLET DIGITAL PCR (ddPCR) AND COPY NUMBER ABERRATIONS

ddPCR counts DNA very precisely so that a small number of cells that have too many copies can be detected.

Visit [bio-rad.com/digital-assays](https://www.bio-rad.com/digital-assays) for more information.  
For research use only.

## References

Tamlin et al. (2019). Comparative aspects of mast cell neoplasia in animals and the role of KIT in prognosis and treatment. *Vet Med Sci* 6, 3-18.

Mochizuki H et al. (2017). Genomic profiling of canine mast cell tumors identifies DNA copy number aberrations associated with *KIT* mutations and high histological grade. *Chromosome Res* 25, 129–143.

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