Chronobiology

Circadian Biology or Chronobiology is a multidisciplinary branch of science dealing with study of biological rhythms. The free-running biological rhythms reflect the endogenous mechanisms of cyclic temporization whose expression is morphologically seen as an internal clock called body clock.

Biological rhythms

All levels of biological integration ranging from ecosystem to subcellular structures exhibit rhythms with diverse frequencies. Periods of most of the documented biological rhythms match with that of any one of geophysical cycles present in the nature. Though circadian rhythms are the most prominent one, ultradian, infradian and circannual rhythms also play vital role in chronobiological homeostasis.

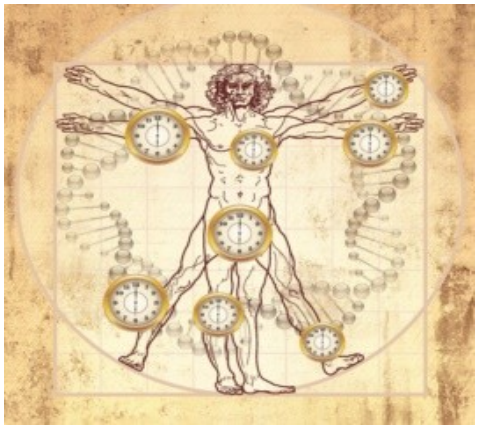
Evolution of biological clock

Life evolved on revolving planet and hence evolutionary forces have installed a powerful endogenous biological clock in all species. Ranging from primordial cyanobacteria, most of the extant organisms from protists to mammals have multiple circadian rhythms within each cell. These living clocks play a vital role in the adaptation of organisms to environmental cycles.

Genetics of biological rhythms

One of the greatest lessons from the molecular biology era is that the living cells use a common set of design principles that grow in complexity but retain axioms in progressing up the evolutionary tree. Genetic and molecular analyses have identified so called clock genes. Inherent oscillations in the transcript and / or protein levels of specific clock genes play central role in the generation of the rhythms.

The temporal effect of genetic programming on genome is known as chronome. A branch of chronobiology dealing with chronome analysis is called chronomics. 2017 Nobel prize in medicine was awarded to Michael Young, Michael Rosbash & Jeffrey Hall for elucidating the molecular mechanism of biological clock.



Circadian Medicine / Chronotherapy

Chronobiological approach of disease diagnosis and management has a lot of untapped potential. We need sufficient clinical data to validate this hypothesis. Most of the lifestyle diseases that we face today have circadian disruption. The reverse is also true and neither is been considered during the prognosis.

Chronobiometry

Procedures for the analysis of circadian rhythms are part of the broader set of procedures involved in time series analysis in general. Chronobiology, in its incessant methodological development, has been oriented mainly towards the methods of periodic regression analysis. Bio-rhythmic data analysis requires special statistical tools due to its complexity.

Customized courses in Chronobiology

Institute of Chronobiology Education & Research in collaboration with Late Prin. B. V. Bhide Foundation is organizing an introductory course / workshop to generate awareness about biological clock and their far-reaching implications on humans and surrounding environment.

We have also devised customize workshops and courses for school children and professionals.

Outline of Introductory Course

Instead of a single introductory lecture for generating awareness about the subject, we have designed a monthly introductory course in Chronobiology with two lectures over each weekend along with project for college students.

- **Lectures:** Each Sat & Sun, 4.00 – 6.00 pm
- **Duration:** 1 month (Beginning on first Saturday of each month)
- **Fees:** Rs. 2500-00+GST
- **Venue:** Bhide Foundation, SP college campus, Pune 30

ICER also provides customized courses and workshops for specific age group and profession.

Certificate courses

- One month (Introductory course)
- One academic semester (Basic course)
- One academic year (Advanced course)

Workshops / Seminars / Internships

• Hands-on activities for school students
• Short term internships for college students
• Seminar for School / College faculties
•It's time to tune your ChronoPrakriti, a customized workshop for professionals

Biological clock is omnipresent
But we are blissfully unaware!

Effect of planet movement

- Day/Night cycle
- Lunar cycle
- Tidal cycle
- Temperature cycle

Life evolved on revolving planet

- Sleep / Wake cycle
- Diurnal / Nocturnal life style
- Reproductive / Breeding cycles
- Leaf movement / Flowering in plants
- Migration / Hibernation in animals

Examples of temporal dysregulation

- Jet lag syndrome / Social jet lag
- Insomnia / Sleep disorders
- Summer / Winter depressions
- Plant / Animal behaviour in eclipse
- Thermal /Light pollution in ecosystem
- Metabolic / Mental disorders
- Daily schedule in blind people
- Surgical anaesthesia
- Day light saving time (DST)

Introductory Course in Chronobiology

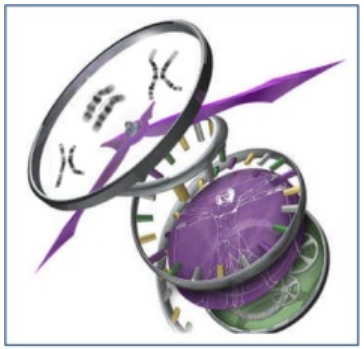
Jointly organized by

Institute of Chronobiology Education & Research

&

Late Prin. B. V. Bhide Research Foundation

Tel No: 9850753615, 8888810554
Email:chronobiology2017@gmail.com



For more details and registration
https://chronolab.wordpress.com/
http://bhidefoundation.org/chronobiology/