# About Chronobiology

Most of us have very little knowledge about the inner clock of the human body, because it is a young science from Europe, which has only been gaining importance  throughout the past three decades. It is called Chronobiology and principally means: The human organism cannot escape the day-night-cycle that happens when the earth rotates. Light and darkness have shaped human history from the beginning of mankind. Even the 1. Book of Moses starts with the creation of day and night.

This fundamental rhythm is controlled by genetically manifested timers that reside deep within our bodies. The more intelligently we absorb their information, the more use we can make of it. This connection is of particular importance in the prevention and treatment of diseases as well as for the healing process.

### The History of Chronobiology

The beginnings of Chronobiology date back to the 18th century. The astronomer Jean Jacques d’Ortous de Mairan reported daily leaf movements of the Mimosa. In experiments, he was able to show that the leaves continue to swing in a circadian way even in permanent darkness.

Renowned scientists like Georg Christoph Lichtenberg, Christoph Wilhelm Hufeland, Carl von Linné, and finally, yet importantly, Charles Darwin reported similar rhythmic phenomena.

But it wasn't until the 20th century that the scientific research of chronobiology began, ranking Wilhelm Pfeffer, Erwin Bünning, Karl von Frisch, Jürgen Aschoff, Colin Pittendrigh, and Arthur Winfree among its pioneers.

### The Three Basic Cycles of Chronobiology

**Infradian Rhythms** (from Latin*infra*, under/less, and *this,*day): cycles that take less than a day to completion. They perform several recurrences throughout a day. A typical example is the sensation of hunger. Even our activity curve drops for one or one and a half hours, which is the ideal time for a nap—and not only in the afternoon.

Examples: the change of tides, phases of the moon, the reproductive cycle of women, the annual cycle.

**Ultradian Rhythms** (from Latin *ultra*, over/more, and *this*, day): The frequency is more than one day, so, one beat takes less than 24 hours, it therefore occurs several times a day. A typical example is the sensation of hunger. Even our activity curve drops for one or one and a half hours, which is the ideal time for a nap—and not only in the afternoon.

Examples: the feeding cycles of field mice, the 90 minutes long sleeping cycle of an adult human or the pulsatile release of hormones of the hypophysis.

**Circadian Rhythms** (from Latin *circa*, approximately, and *this*, day): Rhythms that take approximately 24 hours, e.g. the human sleeping/waking cycle, leaf movements of plants. Many effects of circadian rhythms directly and immediately affect humans; therefore, they are the most extensively researched.

Thus, all further explanations refer to circadian rhythms.

### The Three Areas of Study of Chronobiology

[**Chronophysiology**](http://chronobiology.com/practice-of-chronobiology/chronophysiology/): In this field the physiological basics are studied, which systems generate certain rhythms, how these different systems are interwoven, and how they can be influenced.

[**Chronopathology**](http://chronobiology.com/practice-of-chronobiology/chronopathology/): It is the focus of these studies to find out which general health dangers can be found when the physiological processes of Chronobiology are disturbed. Through chronopathology certain diseases or symptoms can be explained which were previously difficult to explain. One example is the jet lag condition (or as it is medically known: desynchronosis), which cannot be retraced to the lack of certain messenger substances, but can be explained by the release of these messenger substances at the wrong time.

[**Chronopharmacology**](http://chronobiology.com/practice-of-chronobiologychronopharmacology/): Based on the knowledge of chronobiology and the corresponding pathology, new therapeutic approaches have recently been developed, which consider the basic principals of chronobiology. Here, not only do we aim to replace missing individual substances, but also to administer those substances at the optimal time of day.

**Read more:** [**About Chronobiology Today**](http://www.chronobiology.com/about-chronobiology-today/)