To oscillate is to move in one direction and back again in a steady, uninterrupted rhythm.

Many mechanisms in the body oscillate. The periods vary from milliseconds to many months. Subcellular molecules to macrocellular tissues oscillate.

Biologic oscillators synchronize and couple to each other. There may be complex feedback loops.

These functions may be disrupted by external artificial electromagnetic signals in a number of ways. This map introduces topics which are expanded in other maps.

EXAMPLES OF OSCILLATIONS
Respiration
Blinking
Swallowing
Cardiovascular rhythm
Walking
Peristalsis
Brain rhythms
Circadian rhythms
Temperature oscillations
Cellular calcium oscillations
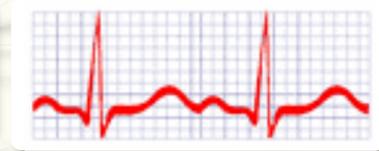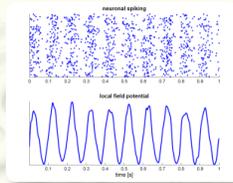
D. Panagopoulos, O. Johansson, G. Carlo:
Polarization, Natural/Unnatural EMF/EMF

C. Sage:
Non-Linear Bio-Oscillations, EHS, MCS

A. Liboff:
Electric Polarization and Viability

Links

Biological Rhythms

REM, BRAC, Buszaki

Biochemical oscillators

Alpha, mu, gravity, cognition

Oscillations in cell biology

Cellular oscillatory mechanisms

⭐ Mode coupling in living systems

Definitions, explanations, samples

Forced Oscillations and Resonance

Schumann resonance and intelligence

Circadian rhythms, multiple oscillators

⭐ Importance of internal time-clocks

Action potential, subthreshold oscillations

⭐ Coupled oscillators, G-I cell replacement

Coherent hippocampal oscillations, AC effect

⭐ **Clock Genes**

Advantages of oscillations

Tissues that never work get weak

Tissues that cycle on and off are always ready to work during part of their cycle

Tissues that work all the time get exhausted

Tissues oscillate in groups, correcting "errors"

Patterns of cycles using the same tissues can increase the variety and complexity of performance

Oscillations allow timing and coordination of patterns of activity, as well as predictions of outcomes

On and off cycles permit a range of function and control

Oscillations allow distant parts of the brain to coordinate their activities by synchronizing rather than connecting

Home: ***Oscillatorium***
Newest version ***this map***
Date of this update: ***02-21-18***

Oscillations, Bio-Oscillations, Forced Oscillations

⭐ **Quantum Wave Information of Life:**
Some Oscillations, not Others

⭐ **The Oscillatory body:**
Human Physiology and Electromagnetism

See Maps

Living Systems, EMF

Interfacial Water, EMF

Membrane Oscillations

Physiologic Water, EMF

"Oscillating polarized EMFs/EMR (in contrast to unpolarized) have the ability to induce coherent forced-oscillations on charged/polar molecules within ... biological tissue... all charged molecules will be forced to oscillate in phase with the field and on planes parallel to its polarization... Several oscillating electromagnetic fields of the same polarization - such as the fields from different antennas vertically oriented - may also produce constructive interference effects and thus, amplify at certain locations the local field intensity, and the amplitude of oscillation of any charged particle... within living tissue... At such locations, living tissue becomes more susceptible to the initiation of biological effects."
D. Panagopoulos, O. Johansson, G. Carlo

"Such strikingly low magnetic intensities imply the existence of physically equivalent endogenous weak electric field oscillations. These observations... make claims related to electromagnetic pollution more credible... physical factors acting to influence the electric polarization in living organisms play a key role in biology."
A Liboff

"Mammalian cortical neurons form behavior-dependent oscillating networks of various sizes, which span five orders of magnitude in frequency. These oscillations are... functionally relevant... [N]etwork oscillations bias input selection, temporally link neurons into assemblies, and facilitate synaptic plasticity, mechanisms that cooperatively support... long-term consolidation of information.''
G.Buszaki