

Fractals used in medicine

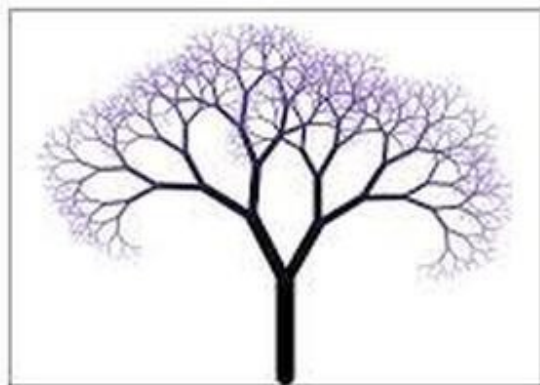
A fractal is a geometric figure which repeats itself to the infinite. It is also the first approximation of a curve or an irregular form which follows deterministic rules. Fractals are used in many medical fields such as oncology.

Not long ago, a new method of cancer detection has been created. Up until now, doctors had to study the aspect a cell nucleus. Obviously they used to deal with countless problems because the nucleus are too tiny therefore they were not able to make reliable diagnosis.

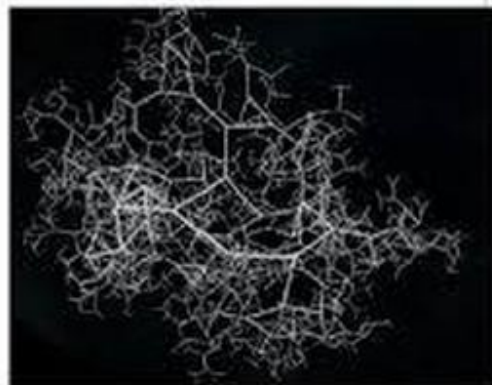
Scientists use two fractal dimensions in order to quantify the irregularity of a nucleus and this way they can determine whether the nucleus is infected or not because irregularity is a sign of cancer malignancy.

Besides, as fractals are operated as magnification, doctors are able to zoom in the organisation of blood vessels. Consequently scientists could detect the network of blood vessels which appears before the tumour does. It is such a breakthrough because nowadays our medical devices are not efficient enough. This new method makes a more precise representation of the blood vessel which is totally disordered and not like a “tree” as we thought possible. However scientists hope that one day this network might be detected only with ultrasound.

Doctors can yet have more prevention diagnoses which increase the chances of recovery. Scientists are hopeful concerning the breakthrough that still to be achieved whereas some of them are staying doubtful.



The “tree” blood vessels representation



The representation of blood vessels using fractals