P-14: Oliver Szasz, Gabor Andocs, Nora Meggyeshazi, Andras Szasz (2012) Oncothermia paradigm

Oncothermia paradigm

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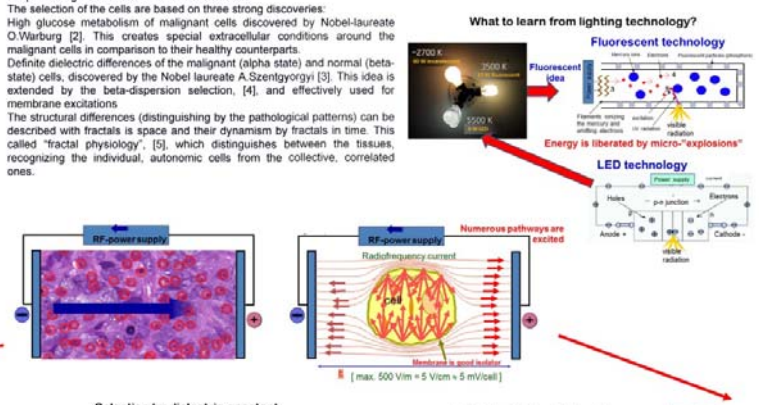
Objective

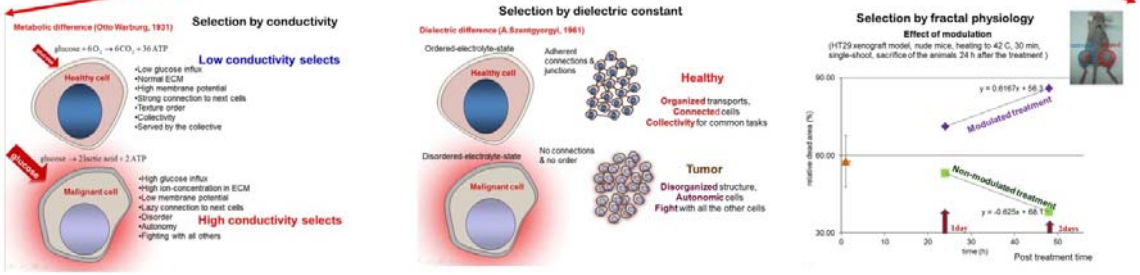
Oncothermia is a new type of cancer-treatment targeting the malignant cells on nano-range, at its membrane and exciting basic cellular signaling pathways, [1]. The front-line achievements explaining the cellular differences between malignant and healthy cells were well recognized in the last century, but unfortunately these were not used for selection in practical applications. Our objective is to show how oncothermia uses these brilliant and strongly proven results.

Philosophy of Oncotherm Research and Innovation

Method

Oncothermia excites many signaling pathways by electric field and huge temperature gradient at the cellular membranes.
The selection of the cells are based on three strong discoveries:
High glucose metabolism of malignant cells discovered by Nobel-laureate O.Warburg [2]. This creates special extracellular conditions around the malignant cells in comparison to their healthy counterparts.
Definite dielectric differences of the malignant (alpha state) and normal (beta-state) cells, discovered by the Nobel laureate A.Szentgyorgyi [3]. This idea is extended by the beta-dispersion selection, [4], and effectively used for membrane excitations
The structural differences (distinguishing by the pathological patterns) can be described with fractals is space and their dynamism by fractals in time. This called "fractal physiology", [5], which distinguishes between the tissues, recognizing the individual, autonomic cells from the collective, correlated ones.





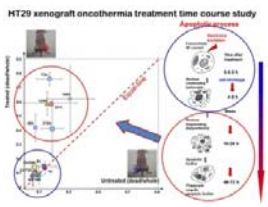
Results

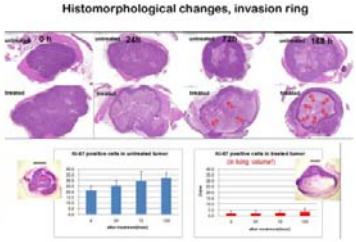
In consequence of the effects multiple changes are recognized in the outer cell-membrane:

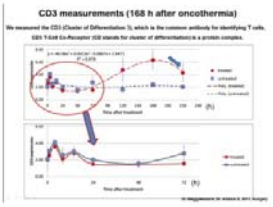
- Inducing apoptotic signal
- Forming membrane-HSP
- Higher transparency
- Higher motility of domains
- Rebinding E-cadherin
- Damages on membrane
- Rectification- demodulation

in the cytosol:

- Dilution of the cytoplasm
- Higher pressure developed
- Activated apoptotic pathways
- Activated death receptors
- The effects and their actions in the oncothermia treatment process can be measured in vitro and in vivo as well.







Conclusion

Oncothermia uses cellular nano-effects for targeting and eliminating the malignant cells. It is a feasible and well proven method for natural cell-killing and for immune activation as well.

In memoriam Reka Szasz

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