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MIRA

MIRA, the Magnetic-field-based Immunotherapy for Remission with Antibodies, represents a paradigm shift towards an effective, painless and side effect free cancer treatment based on biotechnology and physics.

An essential problem when treating cancer is the selective access and controlled destruction of tumour cells in the patient's body. After tumours have been surgically removed, individual tumour cells often remain in the body, out of which new tumours could develop.

The traditional follow-up treatments of chemotherapy and radiation are often unable to destroy these cancer cells in a controlled manner. Besides, these therapies come along with untold side effects and the destruction of healthy cells might cause more harm to the patient.

Based on current diagnostic methods, the possibility now exists of combining biotechnology and physics to come up with a more effective and gentle way to treat cancer. To this end, antibodies endowed with special iron nanospheres are used, as well as alternating magnetic fields, which generate a force through a physical coupling that destroys the abnormal cell without harming the surrounding healthy tissue. MIRA, the Magnetic-field-based Immunotherapy for Remission using endowed Antibodies is a unique cancer therapy, highly selective, efficient, side-effect free and derived from MOA², a pulsed plasma thruster, used for space applications.

By combining MIRA's unique magnetic fields, based on so-called Alfvén waves, with specific antibodies, which are endowed by iron nanospheres, a force is generated that destroys the tumour's cell membrane, thereby irreversibly damaging the cancer cell. This facilitates gentler treatment, since its effect can be switched on and off in a targeted manner. Depending on the treatment method, this allows the tumour to be destroyed in one or more carefully planned sessions.

MIRA is at the centre of the MIRA Company that is currently in its start-up phase and incubated at ESA BIC Wr. Neustadt. If MIRA functions well, the first complete healing of surface-near cancer types (like breast, skin and prostate) is close at hand.

USP

MIRA, the gentle and effective cancer therapy, is so small, flexible and portable that hospitalisation is no longer necessary; allowing patients to receive an ambulatory MIRA therapy from their primary care physician.

Target Market

MIRA is to be developed to treat cancer patients, culminating in an efficient and gentle system with the greatest possible patient and user friendliness.

Space Connection

The fundamental physical principle used with MIRA is based on the MOA2 plasma accelerator, a globally protected technology, which enables a number of innovations, such as space propulsion systems, resting upon its ability to accelerate charged particles at speeds of hundreds of kilometres per second



Team MIRA

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