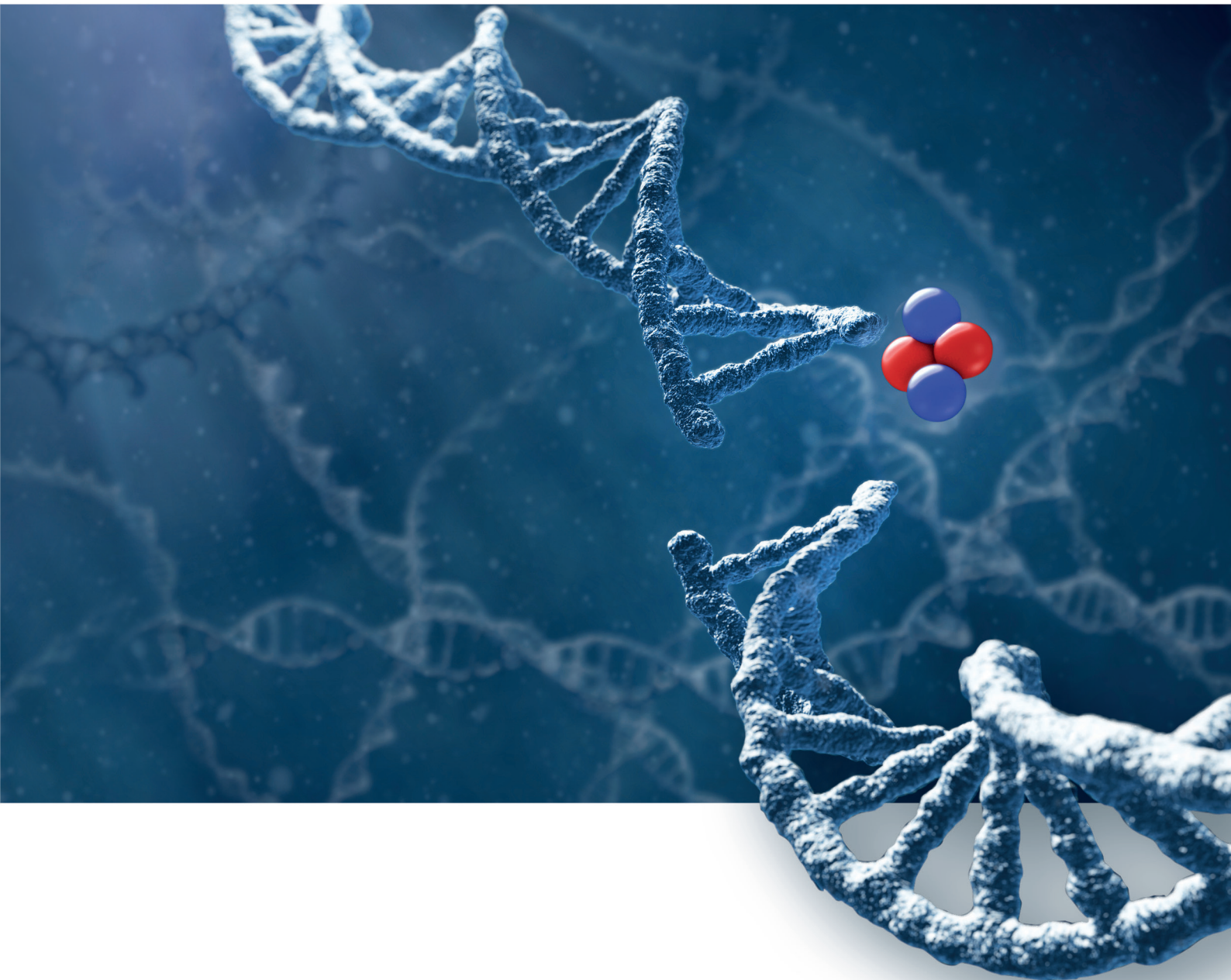


# AlphaDeRT

## Revolutionary Alpha-Emitters Brachytherapy



# AlphaTAU

# Alpha for Brachytherapy Treatments?

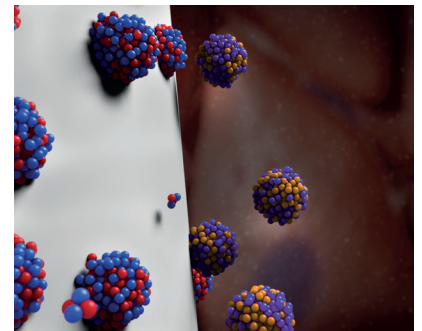
## ☛ The Destructive Power of Alpha Particles

Alpha particles are known to be highly destructive to cancerous cells regardless of their cell cycle stage or level of oxygenation. Alpha particles directly damage the cell DNA, creating complex double-strand breaks that are lethal to the tumor. However, the short range of alpha particles in tissue had made them rare candidates for treating solid tumors.

Alpha DaRT (Diffusing Alpha-Emitters Radiation Therapy) enables the use of alpha particles for the treatment of solid tumors.

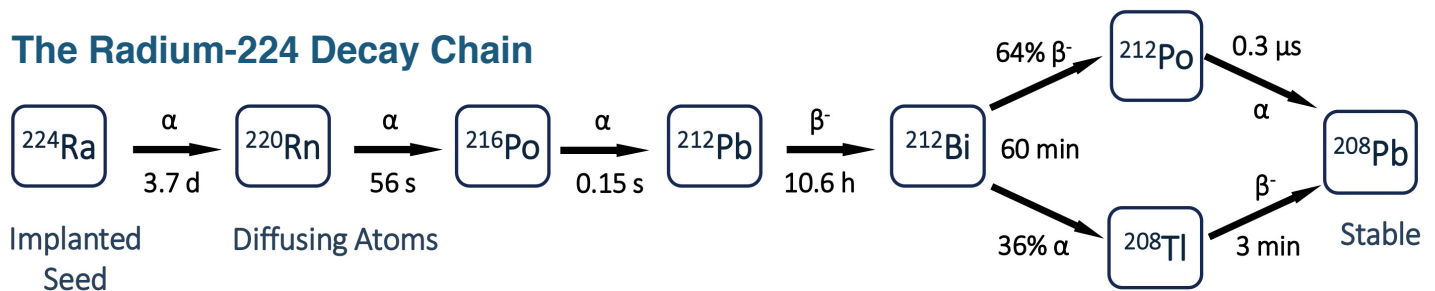
## ☛ Revolutionary Alpha DaRT Technology

The Alpha DaRT treatment is delivered by intratumoral insertion of Alpha DaRT seeds which are similar in size and shape to fiducial markers. The seed's surface contains Radium-224 which has a half-life of 3.7 days. When the Radium decays, its short-lived daughters are released from the seed, disperse in the tumor and emit high-energy alpha particles which destroy the tumor.



Since alpha particles are so potent, the total activity on each seed is very low. Hence, the overall exposure to gamma radiation is negligible and neither affects the surrounding tissue nor the patient's health.

### The Radium-224 Decay Chain



## ☛ Alpha DaRT Has Several Important Advantages



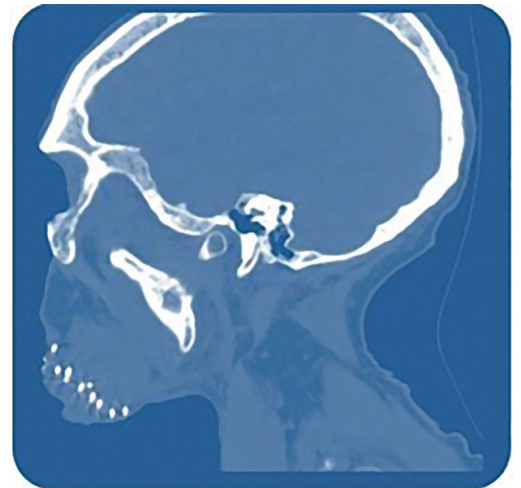
- ☛ Highly potent and conformal.
- ☛ Proven efficacy for all solid tumors tested.
- ☛ Effective regardless of tumor oxygen level.
- ☛ Short half-life – quick clinical outcome.
- ☛ Single-session treatment.
- ☛ Enables combination with other therapies or re-application.
- ☛ No negative systemic effects, safety for both patient and clinician.
- ☛ No capital or shielding equipment.

# Alpha DaRT Clinical Trials

The company is running clinical trials in Squamous Cell Carcinoma (SCC) of the Head, Neck and Skin and is currently working with leading clinicians on protocols of other indications such as breast cancer, prostate cancer, gynecological cancer and pancreatic cancer.

## Promising Preliminary Results

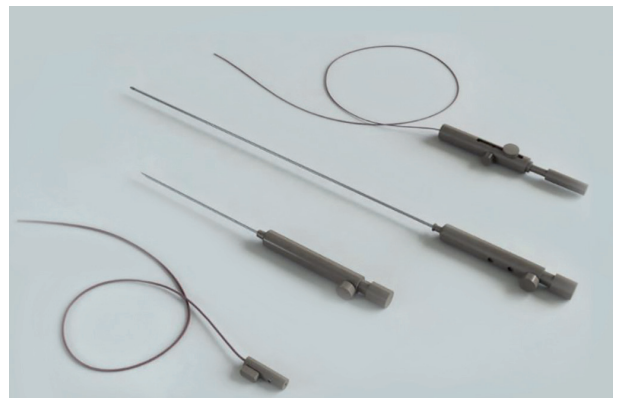
Preliminary results of the SCC trial are highly promising in terms of both safety and efficacy. In this study, patients are treated with Alpha DaRT under local anesthesia in a single session. First positive response of the tumors can be seen a few days after insertion of the seeds. The seeds can be removed after 15 days, when more than 95% of the dose is delivered. The trial has shown the potential of Alpha DaRT to achieve local control over the tumor without negative systemic effects. In addition, radiation measures before, during and after the treatment indicated high safety to the patient and the clinical team without using special shielding. The company is looking to commence more trials of further indications and is currently collaborating with leading cancer centers worldwide.



## Ultra-Minimally Invasive Disposable Applicators

The company has developed disposable and easy-to-use applicators for the insertion of the Alpha DaRT seeds. Through ultra-minimally invasive procedures, Alpha DaRT enables the treatment of various anatomic areas in a safe and effective manner.

The procedure does not require any capital equipment or special shielding and will be available to millions of patients around the world.



**Join our research and efforts in fighting cancer.**

————— Contact us: [info@alphataumedical.com](mailto:info@alphataumedical.com) —————

# The Company

## Alpha Tau Medical

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Alpha Tau Medical was founded in Tel Aviv. The company focuses on research, development and commercialization of the Alpha DaRT Technology. Inspired by Marie Curie, the team believes that only through research and business collaborations, the therapeutic potential of radium for the treatment of cancer can be entirely fulfilled.

## Alpha DaRT Publications

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Arazi, L., Cooks, T., Schmidt, M., Keisari, Y., Kelson, I. Treatment of solid tumors by interstitial release of recoiling short-lived alpha emitters. *Phys. Med. Biol.*, 52: 5025-5042; 2007.

Cooks, T., Arazi, L., Schmidt, M., Marshak, G., Kelson, I., Keisari, Y. Growth retardation and destruction of experimental squamous cell carcinoma by interstitial radioactive wires releasing diffusing alpha-emitting atoms. *Int. J. Cancer* 122: 1657-1664; 2008.

Cooks, T., Arazi, L., Efrati, M., Schmidt, M., Marshak, G., Kelson, I., Keisari, Y. Interstitial wires releasing diffusing alpha-emitters combined with chemotherapy improved local tumor control and survival in squamous cell carcinoma bearing mice. *Cancer* 115: 1791-1801; 2009.

Cooks, T., Schmidt, M., Bittan, H., Lazarov, E., Arazi, L., Kelson, I., Keisari, Y. Local control of lung derived tumors by diffusing alpha-emitting atoms released from intratumoral wires loaded with Radium-224. *Int. J. Rad. Oncol. Biol. & Phys.* 74: 966-973; 2009.

Arazi, L., Cooks, T., Schmidt, M., Keisari, Y., Kelson, I. Treatment of solid tumors by alpha emitters released from 224Ra-loaded sources – internal dosimetry analysis. *Phys. Med. Biol.* 55: 1203-1218; 2010.

Horev-Drori, G., Cooks, T., Bittan, H., Lazarov, E., Schmidt, M., Arazi, L., Efrati, M., Kelson, I., Keisari, Y. Local control of experimental malignant pancreatic tumors by treatment with a combination of chemotherapy and intratumoral 224Radium-loaded wires releasing alpha-emitting atoms. *Transl. Res.* 159: 32-41; 2012.

Lazarov, E., Arazi, L., Efrati, M., Cooks, T., Schmidt, M., Keisari, Y., Kelson, I. Comparative in vitro microdosimetric study of murine and human-derived cancer cells exposed to alpha particles. *Radiat Res.* 177: 280–287; 2012. [2011 Nov 11, Epub ahead of print]

Milrot, E., Jackman, A., Flescher, E., Gonen, P., Kelson, I., Keisari, Y., Sherman, L.. Enhanced killing of cervical cancer cells by combinations of methyl jasmonate with cisplatin, X or alpha radiation. *Invest. New Drugs.* Epub Sept. 06, 2012.

Cooks, T., Tal, M., Raab, S., Efrati, M., Reitkopf, S., Lazarov, E., Etzyoni, R., Schmidt, M., Arazi, L., Kelson, I., Keisari, Y. Intratumoral Ra-224-loaded wires spread alpha emitting atoms inside solid human tumors in athymic mice and can achieve local tumor control. *Anticancer Res.* 32(12): 5315-21; 2012.

Reitkopf, S., Cooks, T., Schmidt, M., Efrati, M., Arazi, L., Rath-Wolfson, L., Marshak, G., Kelson, I., Keisari, Y. Ablation of experimental colon cancer by intratumoral 224 Radium-loaded wires is mediated by alpha particles released from atoms which spread in the tumor and can be augmented by chemotherapy. *Int J Radiat Biol.* 91:179-186; 2015. doi: 10.3109/09553002.2015.959666.

Confino, H., Hochman, I., Efrati, M., Schmidt, M., Umansky, V., Kelson, I., Keisari, Y. Tumor ablation by intratumoral Ra-224 loaded wires induces anti-tumor immunity against experimental metastatic tumors. *Cancer Immunol. Immunother.* *Cancer Immunol. Immunother.* 64(2):191-9; 2015; doi: 10.1007/s00262-014-1626-8.

Confino, H., Schmidt, M., Efrati, M., Hochman, I., Umansky, V., Kelson, I., Keisari, Y. Inhibition of mouse breast adenocarcinoma growth by ablation with intratumoral alpha-irradiation combined with inhibitors of immunosuppression and CpG. *Cancer Immunol. Immunother.* e-press Aug. 06, 2016. DOI: 10.1007/s00262-016-1878-6

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