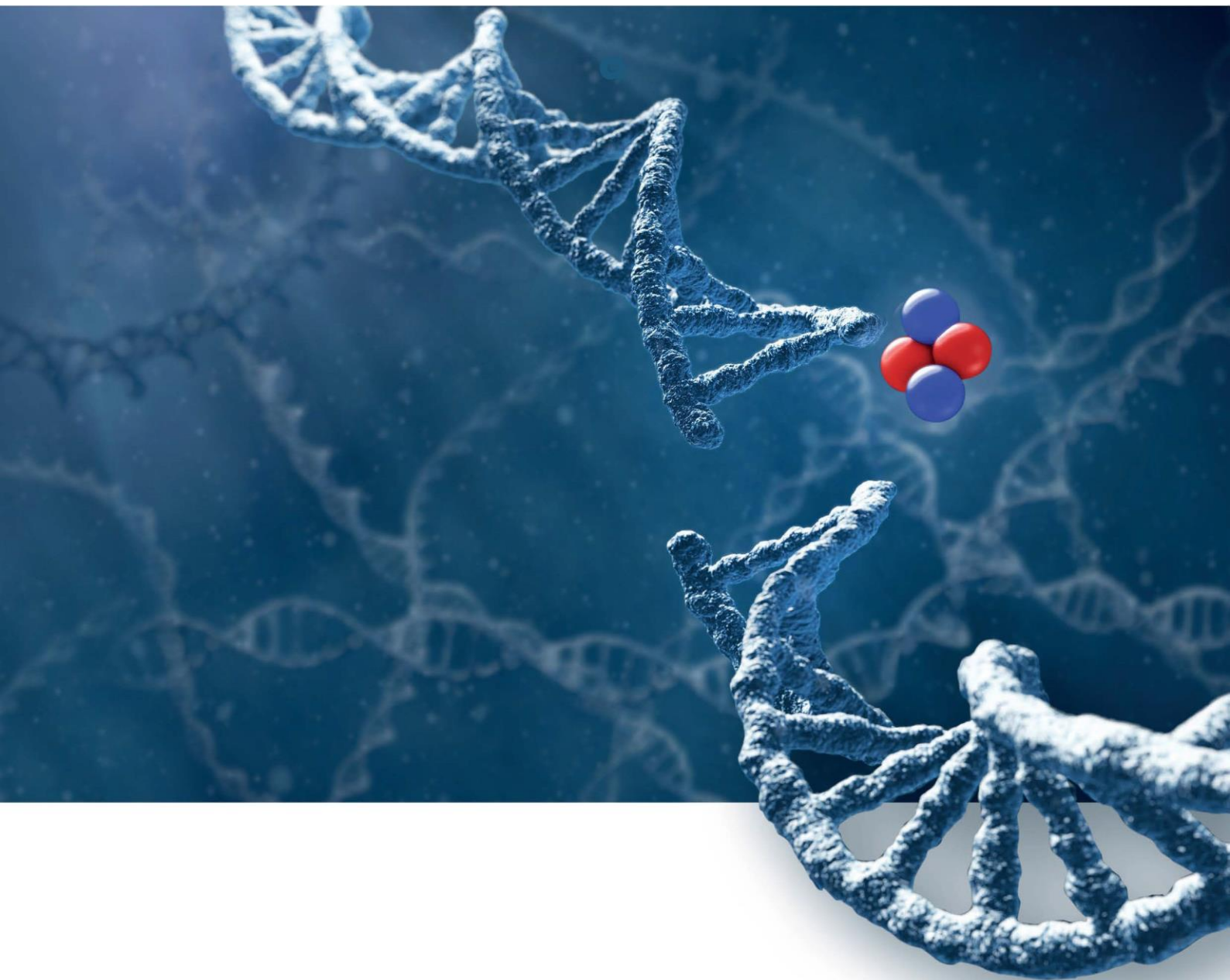


# AlphaDeRT

Revolutionary  
Alpha-Emitters Radiotherapy



AlphaTAU

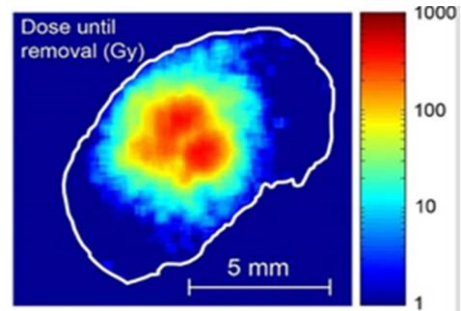
# Alpha for Radiotherapy?

## Leveraging the Destructive Power of Alpha Particles

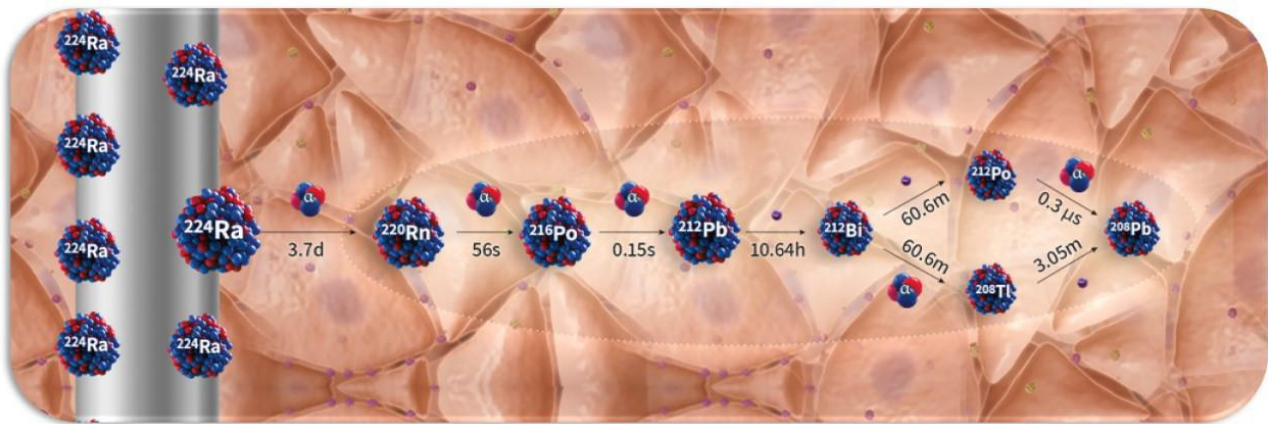
Alpha particles are known to be highly destructive to cancerous cells regardless of the cell's lifecycle stage or level of oxygenation. Alpha particles directly damage the cell DNA, creating complex double-strand breaks that are lethal to the tumor. However, the short range of alpha particles in tissue (<0.1 mm) had, in the past, made them impractical for treating solid tumors.

## Enabling the Treatment of Solid Tumors

Alpha DaRT (Diffusing Alpha-emitters Radiation Therapy) enables the use of alpha radiation for the treatment of solid tumors. Within a few mm radius from the Alpha DaRT source, there is a zone of high local alpha radiation level, which drops off rapidly further out. This zone provides a highly conformal local dose of radiation to the tumor.



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 atoms which have a short half-life of 3.7 days. When the Radium decays, its short-lived daughters are released from the seed, and disperse in the tumor, and emit high-energy alpha particles which destroy the tumor. The high relative biological effectiveness (RBE) of alpha particles enables the use of extremely low radiation levels and thereby ensures a mild safety profile with low risk for both the patient and the medical staff.



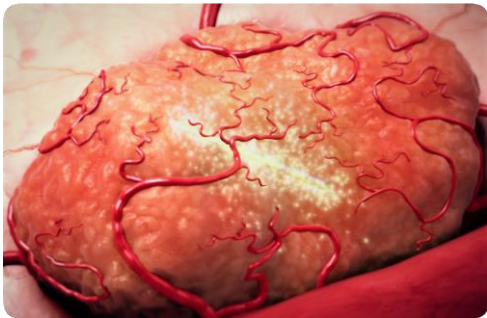
The figure above shows how Radium-224 implanted into a tumor undergoes decay by emitting an energetic alpha particle and, through recoil energy, a daughter atom Radon-220 is released into the tumor tissue. Subsequently, other daughter atoms are released until the decay chain ends with a stable Pb-208 isotope in very small quantities that are not dangerous to the body. The alpha-emitting atoms diffuse up to a few millimeters in the tumor, allowing the radiation to cover a zone with a diameter of up to 5mm.

# Alpha DaRT Clinical Trials

## Clinical Collaborations Worldwide

The Alpha DaRT cancer treatment is currently being investigated in clinical trials at leading cancer centers worldwide, such as Memorial Sloan Kettering New York (USA), University of Montreal (Canada), and National Cancer Center (Japan). Indications include skin cancer, oral cavity cancer and breast cancer. Further trials are in process for the investigation of additional cancer indications.

## Alpha DaRT Advantages



- ✓ Highly potent and conformal, spares healthy tissue
- ✓ Enhances systemic anti-tumor immune response
- ✓ Low local toxicity, no negative systemic effects
- ✓ Proven safety for patient and caregivers
- ✓ Enables combination treatment or re-application
- ✓ Proven treatment efficacy for all solid tumors tested

## Ultra-Minimally Invasive Disposable Applicators

Alpha Tau 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.

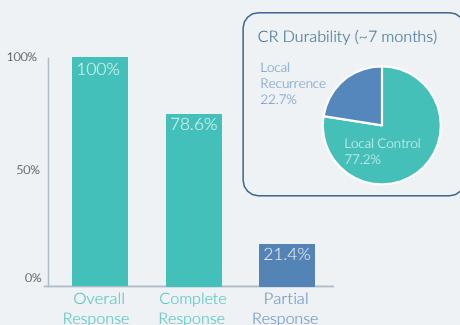


## Promising Clinical Results

Clinical results of the Alpha DaRT published in the International Journal for Radiation Oncology Biology, Physics, showed to be promising in terms of both safety and efficacy. The treatment was evaluated in 28 squamous cell carcinoma tumors of the skin and head & neck and achieved a >78% complete response rate despite the elderly (median age = 80.5 years) and heavily pretreated patient population. The treatment showed high safety with minimal local and no systemic toxicity.

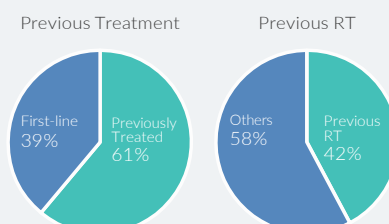
### Efficacy Results\*

Overall Response  
(n=28)



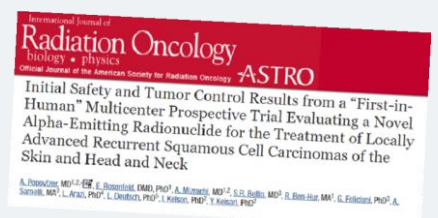
### Baseline Disease Characteristics

Effective against radioresistant tumors  
(Patient median age = 80.5 years)



### Conclusion

- ✓ 100% overall response
- ✓ Durable outcomes
- ✓ Extremely low toxicity, high safety



\*The result of First-In-Human Trial of Squamous Cell Carcinoma

# Potential Efficacy Across Indications

## Validation of DaRT technology, In-Vitro and in Animal Studies

Preclinical studies were performed in-vitro and in-vivo with eight mouse tumor models and ten human-derived tumors, implanted in athymic mice, to establish the therapeutic effect of Diffusing Alpha-Emitters Radioactive Therapy (DaRT). In addition, we performed an experiment on large animals to determine the effect of the radioactive seeds on normal tissue and on blood vessels. DaRT was applied by intratumoral insertion of Ra-224 embedded into stainless steel seeds.

The results of the preclinical studies were published in 14 peer-reviewed papers, and results of clinical studies were published in 2 peer-reviewed papers.

The studies include the following results:

Cancer	Murine Cells in Mice	Human Cells in Athymic Mice
Squamous Cell Carcinoma	X	X
Lung Squamous Cell Carcinoma		X
Lung Adenocarcinoma	X	X
Pancreas adenocarcinoma	X	X
Prostate Adenocarcinoma	X	X
Breast Carcinoma	X	X
Glioblastoma multiforme		X
B-Cell Lymphoma	X	X
Melanoma	X	X
Colon Carcinoma	X	X



## Alpha DaRT Publications

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United States  
 Address: 1 Union St.  
 Lawrence, MA 01840, United States  
 Phone: +1 (833) 455 3278  
 Fax: +1 (833) 455 3278  
[info@alphatau.com](mailto:info@alphatau.com)  
[www.alphatau.com](http://www.alphatau.com)

Israel  
 Address: 5 Kiryat Hamada St.  
 Jerusalem 9777605, Israel  
 Phone: +972 2 373 7000  
 Fax: +972 3 741 3117  
[info@alphatau.com](mailto:info@alphatau.com)  
[www.alphatau.com](http://www.alphatau.com)