Â Â UNITED STATES SECURITIES AND EXCHANGE COMMISSION Washington, D.C. 20549 Â Â Â FORM 6-KÂ Â Â REPORT OF FOREIGN PRIVATE ISSUER PURSUANT TO SECTIONÂ 13A-16 OR 15D-16 UNDER THE SECURITIES EXCHANGE ACT OF 1934 Â For the month of January 2025 Â Commission File Number: 001-41316Â Â Â Alpha Tau Medical Ltd.(ExactName of Registrant as Specified in Its Charter) Â Â Â Kiryat HaMada St. 5Jerusalem, Israel 9777605+972 (3) 577-4115 (Address of principal executive offices) Â Â Â Indicate by check mark whether the registrant files or will file annualreports under cover of Form 20-F or Form 40-F.Â Form 20-F Â â˜’Â Â Â Â Â Â Â Â Â Form40-FÂ Â â˜Â Â Â Â Â CONTENTSÂ On January 27, 2025, Alpha Tau Medical Ltd. (the â€œCompanyâ€)issued a press release titled â€œAlpha Tau Announces Cornerstone Interim Data Across Multiple Clinical Trials to be Shared at R&DUpdate Day.â€ A copy of this press release is attached to this Form 6-K as Exhibit 99.1.Â The information in this Report on Form 6-K, including in Exhibit 99.1attached hereto is being furnished and shall not be deemed â€œfiledâ€ for the purposes of Section 18 of the Securities ExchangeAct of 1934, as amended (the â€œExchange Actâ€), or otherwise subject to the liabilities of that Section, nor shall it be deemedincorporated by reference in any filing made by the Company under the Securities Act of 1933, as amended, or the Exchange Act, exceptas otherwise set forth herein or as shall be expressly set forth by specific reference in such a filing.Â 1 Â EXHIBIT INDEXÂ ExhibitÂ No. Â Description Â Â Â 99.1 Â Press release dated January 27, 2025. Â 2 Â SIGNATURES Â Pursuant to the requirements of the Securities Exchange Act of 1934,as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.Â Â Alpha Tau Medical Ltd. Â Â Â Date: January 27, 2025 By: /s/ Uzi Sofer Â Â Uzi Sofer Â Â Chief Executive Officer Â 3 Â Exhibit 99.1Â AlphaTau Announces Cornerstone Interim Data Across Multiple Clinical Trials to be Shared at R&D Update DayÂ -High disease control rate and strong interim safety results observed in pancreatic cancer patients across three trials exploring theuse of Alpha DaRTÂ® -Â -Ad-hoc analyses of pancreatic cancer population subgroups suggest meaningful improvement in median overall survival (OS) for patientstreated with Alpha DaRT after prior therapy, compared to previously published studies of alternative monotherapies, across all analyzedsubgroups â€“Â -Investigational Device Exemption (IDE) received from the FDA to conduct a U.S. pilot study of Alpha DaRT together with first-line chemotherapyin patients with metastatic pancreatic cancer -Â -Approval received from Franceâ€™s Ministry of Health to commence French multicenter clinical trial of Alpha DaRT alongside capecitabinefor patients with locally advanced pancreatic cancer - Â -In the first eight patients of a combination trial of Alpha DaRT with a checkpoint inhibitor (pembrolizumab) for recurrent unresectableor metastatic head and neck squamous cell carcinoma (HNSCC), a systemic objective response rate of 75% and systemic complete responserate of 37.5% were observed, compared to historical benchmarks of 19% and 5%, respectively, observed for pembrolizumab alone in a similarpatient population in Merckâ€™s KEYNOTE-048 trial -Â -Alpha Tau is hosting a virtual R&D Update Day with Key Opinion Leaders at 11:00am ET today, January 27, 2025 â€“Â -Clinicians to share case studies of selected initial patient outcomes with the Alpha DaRT in treating liver metastases, lung cancer andrectal cancer -Â JERUSALEM,January 27th, 2025 -- Alpha Tau Medical Ltd. (â€œAlpha Tauâ€, or the â€œCompanyâ€) (NASDAQ: DRTS, DRTSW),the developer of the innovative alpha-radiation cancer therapy Alpha DaRTÂ®,announced today positive interim data from multiple clinical trials, including safety and feasibilitystudies treating patients with pancreatic cancer, a combination study with pembrolizumab in patients with recurrent unresectable or metastaticHNSCC, and other clinical trials. The data will be shared during an R&D Update Day to be held today at 11am ET; registration forthe event and further information are available at https://alpha-tau-medical-2025-rd-day.open-exchange.net/registration.Â Â Â PancreaticCancer Trials â€“ Interim Data as of Jan 8, 2025Â Acrossthree ongoing feasibility and safety trials, two in Canada and one in Israel, 41 patients with pancreatic cancer had been treated withAlpha DaRT in Canada (n=24) and Israel (n=17), including the first five patients for whom interim data was already released in late 2023.A 100% success rate was achieved in delivering the Alpha DaRT sources (feasibility), and strong safety results were observed: 151 adverseevents were reported in total, of which 38 were possibly, probably or definitely associated with Alpha DaRT treatment, of which threewere deemed serious adverse events (SAEs). Two of three SAEs required brief hospitalizations and all patients were discharged or recovered.Â Amongthe 41 patients across the three trials, 33 patients had a measured objective response and were examined for survival metrics.Â Usingbest overall response (BOR) in patients with a measured response, the findings from a pooled analysis include:Â â—18%objective response rate, or ORR (either a complete response or partial response) and 91% disease control rate, or DCR (complete response,partial response or stable disease)Â â—Excludingthe first two patients, who were deliberately given low dosages in order to determine feasibility and safety only, analysis demonstrateda 19% ORR and 97% DCRâ€“ with only one patient experiencing progressive diseaseÂ UsingKaplan-Meier statistics for measurement of overall survival (OS), median OS across all 33 patients was 18.6 months after diagnosis orinitiation of the previous round of chemotherapy, or 10.9 months after treatment with Alpha DaRT.Â Ad-hocanalyses of key sub-populations evaluated in the Companyâ€™s pancreatic cancer trials vs. results from relevant third-party clinicalstudies illustrate the potential benefit of Alpha DaRT for patient populations with generally poor prognoses, though caution should beexercised in comparing results from unrelated clinical studies due to differences in study designs, patient populations and other relevantfactors. Findings from the Companyâ€™s ad-hoc analyses include:Â â—Forpatients who could not or would not receive chemotherapy (n=8), patients treated with Alpha DaRT demonstrated median OS of 7.5 monthsafter diagnosis, with four of eight treated patients still alive, compared to third-party studies1,2 suggesting that expectedbaseline survival with untreated pancreatic cancer is approximately 3 â€“ 3.5 months.Â Â 1Zijlstra, M. et al (2018). Patient characteristics and treatment considerations in pancreatic cancer: a population based study in the Netherlands. https://www.tandfonline.com/doi/full/10.1080/0284186X.2018.1470330#abstract2https://pancreatica.org/pancreatic-cancer/pancreatic-cancer-prognosis/Â 2 Â â—Formetastatic patients whose cancer progressed after receiving first-line FOLFIRINOX chemotherapy (n=10), median OS was not yet reachedafter 15.1 months of median overall follow-up since the initiation of FOLFIRINOX, with eight of ten treated patients still alive, comparedto historical studies3,4,5 demonstrating median OS of 10.1 â€“ 11.1 months from the initiation of first-line FOLFIRINOXin metastatic patients.Â â—Forpatients whose cancer progressed after receiving second-line Gemcitabine-Abraxane chemotherapy (n=7), findings show a median OS of 23.0months since the initiation of Gemcitabine-Abraxane, and a median OS of 9.0 months since being treated with Alpha DaRT, with three ofseven treated patients still alive, compared to historical studies6,7,8 demonstrating median OS of 7.6 â€“ 9.9 monthsfrom the initiation of second-line Gemcitabine-Abraxane.Â Intodayâ€™s presentation, the clinicians will discuss the clinician and patient experience with Alpha DaRT for pancreatic cancer, andwill also review the case study of a patient who was treated with Alpha DaRT concurrently with chemotherapy for pancreatic adenocarcinomawith liver metastases and who had a complete resolution on PET

scan at 90 days of both the primary tumor and the liver metastases.Â Â 3Thierry Conroy et al., FOLFIRINOX versus Gemcitabine for Metastatic Pancreatic Cancer. New England Journal of Medicine (2011). DOI: 10.1056/NEJMoa10119234Singhal MK, et al. A phase III trial comparing FOLFIRINOX versus gemcitabine for metastatic pancreatic cancer. Ann Oncol. 2014;25(suppl 4):iv210â€“53.5Laetitia Dahan et al., Randomized Phase II Trial Evaluating Two Sequential Treatments in First Line of Metastatic Pancreatic Cancer: Results of the PANOPTIMOX-PRODIGE 35 Trial. JCO 39, 3242-3250(2021). DOI:10.1200/JCO.20.033296Mita N, Iwashita T, Uemura S, Yoshida K, Iwasa Y, Ando N, Iwata K, Okuno M, Mukai T, Shimizu M. Second-Line Gemcitabine Plus Nab-Paclitaxel for Patients with Unresectable Advanced Pancreatic Cancer after First-Line FOLFIRINOX Failure. J Clin Med. 2019 May 29;8(6):761. doi: 10.3390/jcm8060761. PMID: 31146420; PMCID: PMC66168797Huh G, Lee HS, Choi JH, Lee SH, Paik WH, Ryu JK, Kim YT, Bang S, Lee ES. Gemcitabine plus Nab-paclitaxel as a second-line treatment following FOLFIRINOX failure in advanced pancreatic cancer: a multicenter, single-arm, open-label, phase 2 trial. Ther Adv Med Oncol. 2021 Nov 10;13:17588359211056179. doi: 10.1177/17588359211056179. PMID: 34790261; PMCID: PMC8591648.8Portal A et al. Nab-paclitaxel plus gemcitabine for metastatic pancreatic adenocarcinoma after Folfirinox failure: an AGEO prospective multicentre cohort. Br J Cancer. 2015 Sep 29;113(7):989-95. doi: 10.1038/bjc.2015.328. Epub 2015 Sep 15. PMID: 26372701; PMCID: PMC4651133.Â 3 Â Approvalfor pancreatic cancer clinical trials in U.S. and FranceÂ TheCompany has also announced the receipt of an IDE from the U.S. Food and Drug Administration (FDA), to conduct a clinical study examiningthe combination of Alpha DaRT and first-line chemotherapy in 12 patients with newly diagnosed metastatic pancreatic cancer, as well asthe receipt of regulatory approval from Franceâ€™s Ministry of Health to initiate a French multi-center study examining the use ofAlpha DaRT alongside capecitabine in treating locally advanced pancreatic cancer in 40 patients who have responded or had stable diseasewith first-line FOLFIRINOX.Â Pembrolizumabcombination trial in patients with HNSCC â€“ Interim Data as of Jan 9, 2025Â TheCompany also announced interim data showing strong systemic responses in its safety and efficacy study combining Alpha DaRT treatmentwith pembrolizumab in patients with recurrent unresectable or metastatic HNSCC, targeting a similar population as evaluated in Merckâ€™sKEYNOTE-048 study9 and with a Combined Positive Score (CPS) of at least 1. As of Jan 9, 2025, eight patients were treatedwith Alpha DaRT and pembrolizumab in the study. Of the eight patients treated, three demonstrated a systemic complete response, threedemonstrated a systemic partial response, and two patients died before being evaluated, demonstrating:Â â—37.5%systemic complete response rate, compared to a systemic complete response rate of 5% observed in this population in the KEYNOTE-048 studyÂ â—75%systemic ORR, compared to a systemic ORR of 19% observed in a comparable population in the KEYNOTE-048 studyÂ Anabstract entitled â€œManagement of Metastatic Head and Neck Squamous Cell Carcinoma in Elderly Patients Using Diffusing Alpha-EmitterRadiation Therapy in Combination with Pembrolizumab,â€ with interim data from this clinical study, has been accepted for presentationat the 11th European Congress on Head and Neck Oncology on March 26-29, 2025 in Amsterdam.Â Â 9Burtness,B. et al (2019). Pembrolizumab alone or with chemotherapy versus cetuximab with chemotherapy for recurrent or metastatic squamous cellcarcinoma of the head and neck (KEYNOTE-048): a randomised, open-label, phase 3 study. The Lancet. doi:10.1016/s0140-6736(19)32591-7Â 4 Â Inaddition, no SAEs related to Alpha DaRT treatment were reported in these patients as of the data cutoff date of January 9, 2025.Â Intodayâ€™s presentation, the clinicians will also review the case of a patient with HNSCC in the alveolar ridge and lip as well asdermal involvement, who underwent Alpha DaRT treatment of the neck alongside pembrolizumab, and has experienced a complete resolutionof all tumors and no measurable disease over two years since treatment.Â Followingthese strong results, the Company intends to discuss with the FDA a potential U.S. trial exploring the combination of Alpha DaRT andpembrolizumab in patients with head and neck cancer.Â AdditionalCase StudiesÂ Duringtodayâ€™s R&D Update Day, clinicians will also present case studies from the first patients treated with Alpha DaRT in a numberof other internal organs:Â â—Inthe first Alpha DaRT treatment of a patient with liver metastases from colorectal cancer, conducted as part of a two-stage hepatectomy,the clinicians observed a reduction of 18% in dimension of a treated lesion after one week, and at the same time also saw a reductionof over 25% in dimension of an untreated lesion elsewhere in the liver. The patient was discharged as planned and had an uneventful recovery.Histopathological analysis suggested a pronounced adaptive immune response in the treated lesion.Â â—Inthe first Alpha DaRT treatment delivered into a lung tumor, ten Alpha DaRT sources were delivered into a lymph node metastasis in themediastinum, leading to a 41.6% reduction in volume after one month, and a 52.7% reduction in volume after two months, as well as a reductionin SUV uptake, with no treatment-related adverse events as of Jan 15, 2025.Â â—Inthe first Alpha DaRT treatment of rectal adenocarcinoma, a patient who declined to undergo abdominoperineal resection (APR surgery) andwho instead received Alpha DaRT treatment, had a complete resolution of the tumor, with no self-reported bowel or bladder issues, andno treatment-related adverse events as of Jan 15, 2025.Â 5 Â CommentaryÂ â€œTodayis truly a momentous day for Alpha Tau,â€ noted Alpha Tau CEO Uzi Sofer. â€œWith these fantastic clinical results observed acrossa number of difficult cancers, we are now able to demonstrate the broader Alpha Tau vision: Beyond our historical activities treatingpatients with localized and unresectable tumors, we are now expanding our focus on treating internal organ tumors of high unmet need,as well as tumors in metastatic patients, by harnessing the potential systemic immune benefits of Alpha DaRT. We are incredibly excitedto pursue treatment of these cancers further across a number of future clinical trials, with increased attention to launching U.S. clinicaltrials investigating Alpha DaRT treatment of the pancreas, the brain, and in combination with checkpoint inhibitors. We aim to continueto generate incredible results and hope for these patients of high unmet need.â€Â AlphaTau Virtual R&D Update DayÂ AlphaTau will host a Virtual R&D Update Day featuring Prof. Aron Popovtzer, MD (Hadassah Medical Center), Corey Miller, MD, MSc (McGillUniversity), Philip Blumenfeld, MD, MPH (Hadassah Medical Center), and Robert Den, MD (Alpha Tau) to discuss newly released data andcase studies on Monday, January 27th, 2025 at 11:00am ET. To register for the event, click here: https://alpha-tau-medical-2025-rd-day.open-exchange.net/registration. A live question and answersession will follow the formal remarks.Â AboutAlpha Tau Medical Ltd.Â Foundedin 2016, Alpha Tau is an Israeli oncology therapeutics company that focuses on research, development, and potential commercializationof the Alpha DaRTÂ® for the treatment of solid tumors. The technology was initially developed by Prof. Itzhak Kelson andProf. Yona Keisari from Tel Aviv University.Â AboutAlpha DaRTÂ®Â AlphaDaRTÂ® (Diffusing Alpha-emitters Radiation Therapy) is designed to enable highly potent and conformal alpha-irradiationof solid tumors by intratumoral delivery of radium-224 impregnated sources. When the radium decays, its short-lived daughters are releasedfrom the sources and disperse while emitting high-energy alpha particles with the goal of destroying the tumor. Since the alpha-emittingatoms diffuse only a short distance, Alpha DaRTÂ® aims to mainly affect the tumor, and to spare the healthy tissue aroundit.Â 6 Â Forward-LookingStatementsÂ Thispress release includes â€œforward-looking statementsâ€ within the meaning of the Private

Securities Litigation Reform Act of1995. When used herein, words including â€œanticipate,â€ â€œbeing,â€ â€œwill,â€ â€œplan,â€ â€œmay,â€â€œcontinue,â€ and similar expressions are intended to identify forward-looking statements. In addition, any statements or informationthat refer to expectations, beliefs, plans, projections, objectives, performance or other characterizations of future events or circumstances,including any underlying assumptions, are forward-looking. All forward-looking statements are based upon Alpha Tauâ€™s current expectationsand various assumptions. Alpha Tau believes there is a reasonable basis for its expectations and beliefs, but they are inherently uncertain.Alpha Tau may not realize its expectations, and its beliefs may not prove correct. Actual results could differ materially from thosedescribed or implied by such forward-looking statements as a result of various important factors, including, without limitation: (i)Alpha Tauâ€™s ability to receive regulatory approval for its Alpha DaRT technology or any future products or product candidates;(ii) Alpha Tauâ€™s limited operating history; (iii) Alpha Tauâ€™s incurrence of significant losses to date; (iv) Alpha Tauâ€™sneed for additional funding and ability to raise capital when needed; (v) Alpha Tauâ€™s limited experience in medical device discoveryand development; (vi) Alpha Tauâ€™s dependence on the success and commercialization of the Alpha DaRT technology; (vii) the failureof preliminary data from Alpha Tauâ€™s clinical studies to predict final study results; (viii) failure of Alpha Tauâ€™s earlyclinical studies or preclinical studies to predict future clinical studies; (ix) Alpha Tauâ€™s ability to enroll patients in itsclinical trials; (x) undesirable side effects caused by Alpha Tauâ€™s Alpha DaRT technology or any future products or product candidates;(xi) Alpha Tauâ€™s exposure to patent infringement lawsuits; (xii) Alpha Tauâ€™s ability to comply with the extensive regulationsapplicable to it; (xiii) the ability to meet Nasdaqâ€™s listing standards; (xiv) costs related to being a public company; (xv) changesin applicable laws or regulations; and the other important factors discussed under the caption â€œRisk Factorsâ€ in Alpha Tauâ€™sannual report filed on form 20-F with the SEC on March 7, 2024, and other filings that Alpha Tau may make with the United States Securitiesand Exchange Commission. These and other important factors could cause actual results to differ materially from those indicated by theforward-looking statements made in this press release. Any such forward-looking statements represent managementâ€™s estimates asof the date of this press release. While Alpha Tau may elect to update such forward-looking statements at some point in the future, exceptas required by law, it disclaims any obligation to do so, even if subsequent events cause its views to change. These forward-lookingstatements should not be relied upon as representing Alpha Tauâ€™s views as of any date subsequent to the date of this press release.Â InvestorRelations Contact:IR@alphatau.comÂ 7 Â