



NCI-TTC

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National Cancer Institute Technology Transfer Center: innovation through collaboration

The National Institutes of Health (NIH) is the world's largest collection of biomedical research institutions and a global translational powerhouse. The National Cancer Institute's Technology Transfer Center, through its expertise in managing the commercialization of its own and nine other NIH institutes' discoveries, is leading the way for those seeking to partner and develop world-class biomedical solutions.

The National Institutes of Health (NIH) is one of the largest biomedical research institutions in the world, and its parent agency, the US Department of Health and Human Services, was recently ranked the top government innovator globally by Reuters'. The NIH is recognized for its key role in funding extramural research globally, as well as its focus on moving its intramural discoveries from idea to public health benefit via a dynamic technology transfer engine.

Within the National Cancer Institute (NCI), 1 of the 27 institutes and centers at the NIH, the Technology Transfer Center (TTC) facilitates and manages transactional, codevelopment, and licensing partnerships with companies (in the life science, device, diagnostic, and e-health sectors), universities, non-profits, and government laboratories. The TTC's value-add includes specialists with legal, scientific, and business expertise focused on customer service. These professionals identify partnering opportunities while minimizing the time required to negotiate and execute agreements and licenses. The TTC leads the development of intellectual property from the research laboratories of the NCI and those of nine other NIH institutes and centers, including the National Eye Institute, the National Institute of Minority Health and Disparities, the Eunice Kennedy Shriver National Institute on Child Health & Human Development, the NIH Clinical Center, the National Center for Complementary and Integrative Health, the National Institute on Aging, and the National Institute on Drug Abuse. The TTC's mission is to provide access to NIH scientists and resources with the goal of developing new solutions to benefit patients.

Leading by example

The NIH is a federal government entity and does not perform product development or commercialization. Thus, the TTC works proactively to facilitate partnerships with outside organizations to ensure these inventions reach the market place.

The TTC has been instrumental in the advancement of successful therapeutics, vaccines, diagnostics, medical devices, and research tools that benefit patients worldwide. Recent success stories include:

- Avelumab (Bavencio): developed by Merck Serono and Pfizer and targets the programmed cell death 1 ligand 1 (PD-L1) protein and stimulates the immune system to help fight cancer. Through a cooperative research and development agreement (CRADA), the NCI performed preclinical and clinical studies that

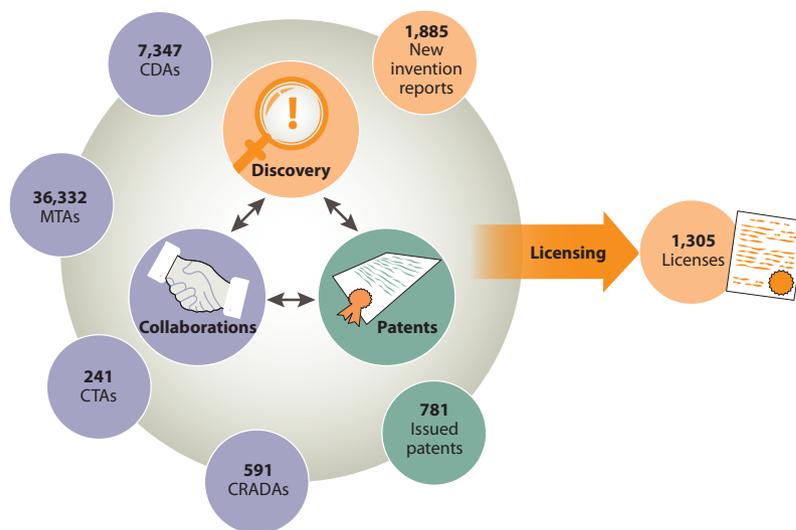


Fig. 1 | The NCI TTC—The FY2007–17 NCI TTC metrics. The TTC has delivered impressive numbers. CDA, confidential disclosure agreement; CRADA, cooperative research and development agreement; CTA, clinical trial agreement; MTA, material transfer agreement.

led to the FDA's approval of avelumab in 2017 for patients with metastatic and local urothelial carcinoma and metastatic Merkel cell carcinoma.

- MicaArray: a low-cost tissue microarray invented by the NCI that allows pathologists to validate immunohistochemical assays for cancer diagnoses in their own laboratories rather than sending them out for analysis. The TTC opted to commercialize the MicaArray through a Small Business Innovation Research-Technology Transfer (SBIR-TT) contract and an exclusive license with Micatu, Inc. The MicaArray has been on the market since 2016, and its first customer was a medical facility in a developing country.
- Dinutuximab (Unituxin): a chimeric monoclonal antibody developed at the NCI that suppresses tumor cell growth in pediatric neuroblastoma. Following lead development and NCI-led clinical trials, the TTC negotiated a CRADA with United Therapeutics Corp. for the manufacture and clinical testing, leading to its US Food and Drug Administration approval in 2015.

These examples illustrate but a few of the options available to parties interested in partnering with the NIH to develop and commercialize the institutes' world-class discoveries.

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1. Ewalt, D. The world's most innovative research institutions – 2017. Reuters [https://www.reuters.com/article/innovative-institution-ranking/the-worlds-most-innovative-research-institutions-2017-idUSL2N1GC1NG \(2017\).](https://www.reuters.com/article/innovative-institution-ranking/the-worlds-most-innovative-research-institutions-2017-idUSL2N1GC1NG (2017).)

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