

Vanderbilt Highlights FY19

Revenues from Licensing: **\$13.4M**

Invention Disclosures:..... **197**

U.S. Patent Applications Filed: **277**

U.S. Patents Issued: **74**

Licenses/Options Executed: **90**

5-year History of License Agreements



Collaborating with Industry

Key to carrying out the mission of CTTC is the ability to form collaborative and professional relationships with companies in a variety of industries including space exploration, education, pharmaceuticals, healthcare/patient care, robotics, energy, environmental preservation, engineering, and many more. CTTC does this through:

Strategic Negotiation

Timely transactions are as critical for us as they are for our industry partners. We pay careful attention to negotiation timelines and work to ensure high levels of responsiveness and rapid closing of negotiations

Reasonable Diligence

Licenses must include reasonable diligence provisions to ensure that products based on Vanderbilt technology are developed and commercialized in a timely fashion for our benefit and the benefit of the public.

Societal Benefit

Our motivations for commercializations are deeply rooted in benefiting individuals and patients on a global scale.

Protection Leads to Commercialization

CTTC views IP protection as a means to an end. The real focus is on commercialization of technologies.

Focused on Transactions

CTTC's experienced team of licensing professionals are highly transactionally focused.

Collaborative Research

CTTC highly encourages industry collaboration, either along with a license or as a precursor.

Quality Driven

High quality contracts lay the foundation for strong and lasting partnerships. Repeat business is important to us.

"We have found working with Dr. Goldfarb a breath of fresh air. His pragmatism and focus on technologies with real human and commercial impact is unparalleled in our experience. Our collaboration for the commercialization of the Indego™ exoskeleton device over the past couple of years is going very well and we expect to continue and expand the relationship for many years to come. The CTTC office at Vanderbilt was refreshingly constructive during our negotiations and has been a pleasure to work with since then as well."

- Craig Maxwell, Parker Hannifin Chief Innovation & Technology Officer

Pictured to the right is a powered exoskeleton developed by Michael Goldfarb, Ph.D., professor at Vanderbilt University School of Engineering, that was licensed to Parker Hannifin and is being marketed as Indego™.



Core Research CAPABILITIES

Institute for Space and Defense Electronics (ISDE)

ISDE contributes to the design and analysis of radiation-hardened electronics, the development of test methods and plans for assuring radiation hardness, and the development of solutions to system-specific problems related to radiation effects. *Areas of focus include:* design support, analysis and simulation, test capabilities, virtual irradiation capabilities, computing capabilities, and facilities.

Institute for Software Integrated Systems (ISIS)

ISIS conducts basic and applied research in the area of systems and information science and engineering. *Areas of focus include:* model integrated computing, distributed object computing, network embedded systems, cyber-physical systems, and education technology.

Institute of Nanoscale Science and Engineering (VINSE)

VINSE is focused on new science and technology based on nanoscale materials. Researchers team locally and globally, providing an environment where physicists, chemists, biologists, and all engineers may collaboratively solve forefront problems and create new scientific understanding. *Areas of focus include:* nanobio, nanoscale electronics, nanoscale optics, nanoscience theory, and nanotechnology and new materials.

Department of Biomedical Informatics (DBMI)

Vanderbilt's DBMI is the largest academic department of biomedical informatics in the country, with more than 70 faculty members. *Areas of focus include:* computer science, information science, cognitive science, social science, engineering, and clinical and basic biological sciences.

Institute for Integrative Biosystems Research and Education (VIIBRE)

VIIBRE invents the tools and develops the skills that are required to conduct research in systems biology. *Areas of focus include:* cellular biosensors, bioprocess controllers, mathematical models for wound healing and cancer, infectious disease detection, biomedical imaging, and cellular/tissue engineering.

Institute for Surgery and Engineering (ViSE)

ViSE is an interdisciplinary, trans-institutional center focused on the creation, development, implementation, clinical evaluation and commercialization of methods, devices, algorithms, and systems designed to facilitate interventional processes and their outcome. *Areas of focus include:* image-guided surgery; intelligent, flexible robotic manipulation; ultrasound guidance for surgical interventions; steerable needles; wireless capsule robotics, and more.

Institute of Imaging Science (VUIIS)

VUIIS operates state-of-the-art facilities for imaging research at all scales including imaging animals and human subjects. *Areas of focus include:* cancer, neurological disorders, metabolic disorders, cardiovascular disease, and others.

- Vanderbilt University is one of the nation's leading research institutions.
- Vanderbilt sponsored research and project awards total \$672M
- Vanderbilt University School of Medicine Ranks 8th in NIH Funding with \$340M
- The School of Engineering ranks 36th for graduate engineering programs
- Vanderbilt is a Clinical Translational Science Award Coordinating Center, leading 62 CTSA institutions in 31 states and the District of Columbia

Institute of Chemical Biology (VICB)

VICB spans 18 Vanderbilt departments, encompassing research interests in cancer, neurodegenerative disease, infectious disease, metabolic disorders, and cardiovascular disease. *Areas of focus include:* high throughput screening, chemical synthesis, antibody and protein production, small molecule NMR services.

Center for Structural Biology (CSB)

CSB leverages a host of various experimental and computational approaches to calculate the structure of various macromolecules, which helps identify novel targets for therapies as well as facilitating the improvement in the design of future drugs. *Areas of focus include:* protein characterization, macromolecular crystallography, bimolecular NMR, computational structural biology and cryo electron microscopy.

Center for Neuroscience and Drug Discovery (VCNDD)

VCNDD utilizes and applies academic understanding of neuroscience to the drug discovery process. Specialized teams of medicinal chemists, molecular pharmacologists, drug and pharmacokineticists, and behavioral pharmacologists work to identify novel compounds with enhanced selectivity, efficacy, and in vivo safety profiles that are ready for testing in clinical settings. *Areas of focus include:* Parkinson's, Fragile X/ Autism, Schizophrenia, and Alzheimer's.

Mass Spectrometry Research Center (MSRC)

MSRC brings state-of-the-art mass spectrometry expertise, methodology, and instrumentation to the research and clinical infrastructure of the Vanderbilt University Medical Center. The MSRC also houses the National Research Resource for Imaging Mass Spectrometry which is currently focusing on developing Imaging Mass Spectrometry for a host of diagnostic/prognostic purposes in a range of areas from cancer to infectious disease. *Areas of focus include:* proteomics and bioinformatics.

Institute for Clinical & Translational Research (VICTR)

VICTR provides a centralized organization structure to efficiently manage, enhance and promote all aspects of clinical and translational research, including providing access to resources, training and collaboration, and informatics and biostatistical systems. It is the home of the Vanderbilt Clinical and Translational Science Awards (CTSA) and serves as the coordinating center for the NIH's entire CTSA system.

"Our experience in collaborating with Vanderbilt University on drug discovery in this challenging area of neuroscience has been first rate. The University was efficient and professional in licensing chemical assets. Moreover, the VCNDD researchers are outstanding in that they bring the expertise, insight and creativity needed to discover new drugs that can be developed into meaningful treatments for patients." - AstraZeneca

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