# How the Office of Technology Commercialization (or, OTC) is Incentivizing Innovation at Georgetown University

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### *1A: Definitions*

*Organizational Behavior:*

> "Organizational behavior is the study of how individuals and groups interact within an organization and how these interactions affect an organization's performance toward its goal or goals. The field examines the impact of various factors on behavior within an organization." (Crail)

*Technology transfer (or tech transfer):*

> "in the context of research institutions, is the process by which new inventions and other innovations created in those institutions' labs are turned into products and commercialized. This is typically done in two ways: through licensing patented intellectual property to corporations, and the creation of start-up companies, which also often license the IP created by faculty." ("What Is Technology Transfer?")

### *1B: Introducing Georgetown's Office of Commercialization (OTC)*

What do Gardasil, Allegra, and a CT Scanner have in common? While they are all connected to essential healthcare items used everyday—both in the United States and around the world—all three products are a part of Georgetown's Intellectual Property (IP) Portfolio. The success of Georgetown developing these products is revealed in the University's ability to take faculty members' published papers and turn them into successfully patented ideas, allowing them to spin out into new technologies.

For example, Dr. Richard Schlegel (MD, PhD), Dr. A. Bennet Jenson (MD), and Shin-je Ghim (PhD) from Georgetown's medical campus published seminal papers in '92 and '95 ("Gardasil."). These findings allowed Georgetown to file both domestic and international patents. Seeing value in these findings, the University of Queensland, the University of Rochester, and the National Institutes of Health (NIH) used these patents to produce the first HPV vaccine—Gardasil—which was subsequently approved for use. Not only was Gardasil the first HPV vaccine on the market, but it is largely cited as being the first "Cancer Vaccine" in the world; signifying the important contributions to science and research Georgetown has engaged in (a true example of success for the university).

The story of Gardasil is a similar story for the symptom reliever medication, Allegra ("Allegra."). Dr. Raymond Woosley of Georgetown's medical campus published seminal papers that included patentable material that allowed Georgetown to capitalize off Woosley's discoveries. Similarly, the CT scanner stands behind the work of Robert S. Ledley, a Georgetown Physicist, who also was able to patent his findings that lead to the development of this advanced medical imaging that is used throughout the world (Langer).

As discussed throughout the semester in STIA 3375-01, to respond to innovative challenges, there are five key enablers: (1) high-level focus on growth and strength, (2) sustained support for universities, (3) rapid growing funding for research, (4) support for innovative small businesses, and (5) government-industry partnerships to bring new products and services to the market (Wessner, Charles, and Joe Pasetti). What allows Georgetown to use its professors and faculty as contributors to science and technology innovation is revealed through the second

point. The "sustained support for universities." More specifically, what allowed for Georgetown's success throughout the later 20th century in its tech transfer: the Bayh-Dole Act.

### *1C: The Bayh-Dole Act*

In 1980, the U.S. Congress passed Public Law 96-517, the Bayh-Dole Act, which provided that rights to inventions resulting from government-sponsored research at universities would be assigned to the universities ("Bayh-Dole Act."). According to Georgetown's Office of Commercialization (or, the OTC), the primary goal of the Bayh-Dole Act is to promote the commercialization of federally funded research through the transfer of innovations and technologies developed at universities into a commercial sector (Saunders). Ultimately, the support of American congressional representatives to push for this legislation has led to an increase in patents awarded to universities. In 1980—or, the year the Bayh-Dole Act went into effect—390 patents were awarded to universities ("The Bayh-Dole Act: Selected Issues in Patent Policy and the Commercialization of Technology."). In 2009, this number went up to 3,088 patents awarded to universities. The significant increase in academic patenting has continued to fuel American innovation; specifically, in the case of Georgetown with their contributions to the research that facilitated the development of Gardasil, Allegra, and the CT Scanner.

As described by Georgetown's Office of Commercialization, the Bayh-Dole Act serves to split a technology—that has transferred from the gates of a university and into the hands of the public—into thirds: one-third of the technology goes back to the university that contributed to the research, one-third of the technology goes back to the enabler of the technology, and one-third of the technology goes to the company that develops the product (Litvin-Vechnyak). Importantly, this one-third, one-third, and one-third split must not be confused with the exact equity stake received by these stakeholders (or, the inventor, the university, and the company). Some universities offer higher equity stakes to their inventors, while others offer lower. For example, the Office of Commercialization shared that the amount of stake given to its inventors—or, in the case of Georgetown, the faculty members who publish their research and successfully attain patents—is higher than at other universities, like Stanford (Litvin-Vechnyak). As shared, universities like Stanford prioritize taking the primary stakeholding of their technology transfer successes. Importantly, because of this monumental piece of US legislation, the Bayh-Dole Act incentivizes innovation and contributes to the sustained support for universities (and therefore responding to innovation challenges in the United States).

### *1D: Methods of Selecting Which Universities to Compare to Georgetown*

It is very difficult to find a perfect comparison of another university that is similar enough to Georgetown to gauge the success of the Office of Commercialization in both their participation in tech transfer and engaging in the Bayh-Dole Act. Realistically, it is valuable to start a comparison with the most successful tech-transfer research institution: Stanford University. Throughout this paper, it will be revealed how Stanford's current metrics from its own tech-transfer office highlight how the university excels when compared to any other program in the country. It is valuable to compare Georgetown to the most thriving program to see how the university deviates from an objective measure of success (or, quantitative metrics like financial or amount of patents issued). To learn more about the success of Stanford, I connected with Dr. William Barnett. Aside from studying Organizational behavior (see definition), Dr.

Barnett is also a director and professor involved in graduate programs (like the Law School and Business School) as well as leading Stanford's Doerr School of Sustainability; his leadership is invaluable to understanding how the university produces so much impactful technology.

Meanwhile, because I have interviewed other research professors at other universities in previous STIA classes, I felt it was valuable to hear how other universities are engaging with tech transfer through the perspective of these researchers. Therefore, I spoke with Dr. Michael Rivera of the University of Colorado, Boulder, Dr. Jonathan Blutinger of Columbia University, and Dr. Brienne Adams of Georgetown University to hear their thoughts on the context of this paper.

Lastly, I sought to compare a university that is organized similarly to Georgetown. This was extremely difficult as this university is unique; it is one of the first colleges in the United States, a Catholic-affiliated university, in a major US city (with both valuable government and business connections), with both a law school and medical school; however, the university is a liberal arts school, and does not have any engineering program. Significantly, universities with engineering programs have the infrastructure to support research and development that can promote tech-transfer initiatives. Therefore, finding a comparable university to Georgetown is difficult.

However, when finding a comparable university, another institution that does not have an engineering program, but is based in a major US city, with both a law school and medical school, is Emory University. In further review, Emory does support students to pursue engineering through a dual-degree program organized with the Georgia Institute of Technology ("Engineering Program Overview."). Importantly, Georgetown also supports its students to pursue engineering through a dual-degree program organized with Columbia University ("The Columbia Combined Program (CCP)."). While Georgetown and Emory differ in endowment sizes—or, Emory has an endowment of $735,402 per student enrolled while Georgetown has only $136,388—both universities are comparable enough in their organizational structure that a valid comparison could still be made ("College Endowments.").

Unfortunately, through many LinkedIn request searches and in reaching out to Emory's tech-transfer office (with the help of Georgetown's Office of Commercialization), I was not able to schedule an interview with faculty at Emory for this paper to learn more about how their institution is internally supporting tech-transfer.

### *1E. Georgetown University Compared to Other Universities*

Commonly—when the media reports on the success of American Universities and their contributions to innovations—the measures of success of universities are the number of founders, companies, and the capital raised by the alumni of these colleges. However, these metrics are not reflective of the university's academic research; in fact, these statistics omit the contributions of faculty at their respective research institutions. Realistically, in failing to publicly share the contributions of these remarkable research institutions, it is difficult to grasp the context of how vital these universities are towards spurring innovation within the United States.

***1E1: PitchBook Universities: Top 100 colleges ranked by startup founders***

| *University* | *Ranking* | *Founder count* | *Company count* | *Capital raised* |
|---|---|---|---|---|
| Stanford University | 1 | 1,435 | 1,297 | $73.5B |
| Columbia University | 14 | 606 | 569 | $19.3B |
| University of Colorado | 39 | 381 | 364 | $7.4B |
| Georgetown University | 42 | 347 | 341 | $9.3B |
| Emory University | 77 | 223 | 212 | $6.7B |

(Rubio, Jordan, and James Thorne)

However, there is one reliable resource that can reveal how impactful research institutions are in innovation: the annual AUTM US Licensing Activity Survey. Yet, these surveys are blocked behind a paywall. Luckily, one of the individuals who I interviewed for this paper, provided me with a copy of the report. The individual asked that I not publicly acknowledge that I was given a copy of this survey from them.

Importantly, AUTM (formerly, the Association of University Technology Managers) "is the nonprofit leader in efforts to educate, promote, and inspire professionals to support the development of academic research that changes the world and drives innovation forward." ("Our History and Mission.")

***1E2: AUTM 2022 US Licensing Activity Survey***

| ***Institution*** | | ***Key Metrics*** | | | | ***Other Benchmarks*** | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Name* | *Start* | *Total Research Expenditures* | *Patent Disclosures* | *New Patent Applications* | *Patent Licensing* | *Copyright Licensing* | *Licensing Revenue* | *Startups* | *Issued Patents* |
| Georgetown University | 1993 | $313,219,990 | 37 | 35 | 0 | 13 | $992,673 | 0 | 24 |
| Emory University | 1995 | $791,631,531 | 212 | 92 | 92 | 16 | $279,210,490 | 5 | 45 |
| Columbia University | 1982 | $1,065,717,152 | 400 | 267 | 36 | 19 | $44,975,537 | 19 | 85 |
| University of Colorado | 1993 | $1,274,884,316 | 293 | 520 | 109 | 6 | $24,058,275 | 28 | 73 |
| Stanford University | 1970 | $1,788,981,211 | 510 | 350 | 114 | n/a | $89,574,070 | 38 | 188 |

("Technology Transfer Licensing Survey.")

The individual who provided me with this report shared that there is a "direct correlation with the total research expenditures and patent disclosures across universities." In saying this, the individual implies that as a research institution receives more funding towards its research, it would lead to an increased amount of patent disclosures (or, the potentially patentable subject matter that is reported by faculty members to their corresponding tech transfer office). When

looking across all identified universities—Georgetown, Emory, Columbia, CU Boulder, and Stanford—an obvious trend emerges: Georgetown has largely been unremarkable when compared to the other universities documented here that use the Bayh-Dole Act to incentivize academic patenting.

To learn more about how the Office of Commercialization will respond to these innovation challenges, I reached out to the OTC. Immediately, I learned that on February 1st, 2023, the office brought on a new Vice President for Technology Commercialization: Dr. Tatiana Litvin-Vechnyak. The position that she leads is a new role that hopes to generate more on-campus support for research faculty to get involved with tech transfer.

Dr. Litvin-Vechnyak comes to Georgetown with a deep scientific and research-based background: she has a B.A. in Biochemistry and Molecular Biology from Clark University, a Ph.D. in Pharmacology from Cornell University Weill Graduate School of Medical Sciences, and completed Postdoctoral Research at Rutgers Cancer Institute of New Jersey (where she was a recipient of the Gallo Award for Outstanding Cancer Research). Her fundamental passion and success in the hard sciences reveal her quantitative-based nature, her critical attention to detail, and her ability to understand and communicate complex issues.

To come to Georgetown, Dr. Litvin-Vechnyak left her position at Rutgers University, where she was the Associate Vice President for Innovation Ventures (or, Rutget's equivalent to Georgetown's OTC). In this role, she led the Rutgers Innovation Ventures team's management of over 1,260 technologies, 2,600 patent assets, 800 licenses, and 90 startup companies. Meanwhile, Dr. Litvin-Vechnyak is also a Registered Patent Agent and on the Board of Directors of AUTM (the group who is responsible for the 2022 AUTM survey that was shared above). Here, Dr. Litvin-Vechnyak's accomplishments in leading innovation at universities, through the USPTO (or, the United States Patent and Trademark Office), and AUTM reveal her professional success in the tech-transfer space. With her scientific, technical, and professional experience, Georgetown's Office of Commercialization found a great candidate to respond to its poor tech-transfer metrics in the AUTM 2022 Survey.

In discussions with Dr. Litvin-Vechnyak and asking: "What happened to Georgetown? How could a university that produced a product like Gardasil, Allegra, and the CT scanner not turn over more recent tech developments?" It was quickly revealed that recently, Gardasil went off-patent. Meaning, that the findings are no longer patented as they have since expired; they no longer require the greater public to license from Georgetown. As the findings have been transferred into the hands of the public, the researchers and the university no longer have exclusivity in their findings. According to Dr. Litvin-Vechnyak, before Gardasil went off patent, Georgetown's patent portfolio (that is managed by the OTC) was over $10,000,000 annually. However, between the fiscal years of 2019 and 2023, Georgetown's patent portfolio has generated approximately $3,000,000; a significant decline in revenue for the office. Revealing the Achilles heel of Georgetown's contributions to innovation and tech transfer: the portfolio is not diverse enough to be sustainable in the long run. After Gardasil went off patent, other innovations in Georgetown's patent portfolio were not significant enough to replace the sheer contributions that Gardasil made towards Georgetown's IP. Therefore, Georgetown has a large innovation challenge in front of them: how will they make their tech-transfer infrastructure within the university more diverse to allow for sustainable growth and success?

The university has recognized this as a challenge. To respond, the university brought in new leadership; which came through hiring Dr. Litvin-Vechnyak. Now, with this new leadership, new changes are underway.

## ***Part 2: The Georgetown University Office of Commercialization's Goals***

Importantly for context, in 2024, Georgetown reports that it has seen $3,000,000 in annual revenue, works with 199 currently issued worldwide patents, manages 65 new licensing agreements, and that approximately 70% of the IP comes directly from Georgetown's medical campus (*Office of Technology Commercialization)*. These metrics allow context for how Georgetown will find success—if these numbers fluctuate and there become notable changes—the OTC could attribute their actions as impacting these quantitative metrics.

However, one aspect that the OTC will assume to be a constant across the foreseeable future, is how the OTC receives its funding. The Office of Commercialization is funded through various sources, including licensing, business startups, venture capital, industry partnerships, additional funded research, and other innovative means ("Commercializing Innovations."). These mechanisms that provide funding will unlikely not change; however, there will be expected fluctuations in funds coming from licensing. If Georgetown increases productivity on its research translating into licensing agreements with outside companies and organizations, an increase in OTC funding is expected.

Ultimately, the outcomes of the university's metrics will change as Georgetown adjusts its priorities. Meaning, that as the OTC challenges itself to become more competitive across other research institutions, it is valuable to understand what is controllable (or, how the university can maximize the use of its resources to achieve success). Because, as stated earlier, breaking down the mission statement to understand if the OTC is accomplishing the goals that they have set out for themselves is critical as Georgetown responds to its innovation challenges.

### *2A: Georgetown's OTC Mission Statement*

When Dr. Litvin-Vechnyak came to the OTC, the office did not have a mission statement. For over 30 years, Georgetown did not verbalize its goals by hinting at tangible targets to achieve its success; therefore, it seems understandable that an office that is not clear what its mission is, would not produce sustainable and favorable outcomes (as seen in the AUTM 2022 survey report). Therefore, Dr. Litvin-Vechnyak, research faculty from across the university, and campus administrators got together and put their goals into words by announcing the following mission statement:

*"Our Mission To advance GU's innovations through strategic alliances and new venture creation, to facilitate the translation of research breakthroughs into tangible solutions, and to cultivate a dynamic and inclusive environment for entrepreneurship. We advance this mission in support of the GU community and for the benefit of society.*

*Our Vision To be effective partners in innovation and research translation through continuous engagement, knowledgeable and accessible staff and support network." ("About Us.")*

However, interestingly, as I was beginning my research for Georgetown's Office of Commercialization's mission statement to compare it to other universities, I found that Georgetown shares the same mission statement as another research institution, Kean University in New Jersey. Their mission statement reads: "OTC works to promote innovations through strategic alliances and new venture creation, to facilitate the translation of research breakthroughs into tangible solutions, and to cultivate a dynamic and inclusive environment for

entrepreneurship. We advance this mission in support of the Kean University community and for the benefit of society." (*Kean University*)

Kean's mission statement was published on their website on August 29, 2022; whereas Georgetown only implemented a mission statement to their programming after Dr. Litvin-Vechnyak came to Georgetown in February 2023. Georgetown likely copied the mission statement of Kean University when determining its goals and objectives for its own OTC programming. While mission statements can be similar from research institutions to research institutions—as they all share the same goal of advancing tech transfer—it is interesting that Georgetown decided to mimic a mission statement from a university that has only successfully been awarded three patents and only launched one startup from its tech-transfer endeavors (*Kean University*). I reached out to the OTC on how similar their mission statement was to Kean University, but the OTC declined to comment.

### *2B: How the OTC's Mission Statement Compares to Other Universities*

To learn how Georgetown's mission statement and goals compare to other universities, I spoke with Dr. William Barnett of Stanford, Dr. Michael Rivera of CU Boulder, Dr. Jonathan Blutinger of Columbia, and Dr. Brienne Adams of Georgetown.

According to Dr. Barnett, part of Stanford's Office of Technology Licensing (OTL) mission statement is as follows: "OTL's mission is to encourage effective technology transfer for the public benefit as well as generating royalty income for Stanford to benefit research and education." ("About OTL.") Dr. Barnett went on to explain that the success of Stanford relies on perceiving tech transfer as a means for financial growth for the university; this is directly reflected in the mission statement that advocates for tech-transfer activities to "generat[e] income for Stanford." In his director position, Dr. Barnett advocated that the research faculty across Stanford be encouraged to take leaves of absence to support innovation. Dr. Barnett has even participated in a leave where he traveled the world and engaged with populations impacted by climate change. Now that he is back, working on campus, Dr. Barnett hopes to translate community development skills into his organizational behavior research focus into research innovation through Stanford's Doerr School of Sustainability.

Meanwhile, this financial motivation is also reflected in part of Columbia's tech-transfer program; "At Columbia Technology Ventures, our mission is to: Facilitate the translation of academic research into practical applications, for the benefit of society on a local, national and global basis. To do so at market-rate terms to support research, education, and teaching at Columbia by generating funding for the University and facilitating partnerships with industry where appropriate." ("Mission.") According to Dr. Blutinger, the established partnerships between public and private companies with the university have led to critical investments that has allowed Columbia to excel in tech transfer. For Dr. Blutinger, his research area in 3D printed foods supports interdisciplinary research across physics, chemistry, and biology through the Fu Foundation School of Engineering and Applied Science. He is funded by both the NSF (or, National Science Foundation) and Redefine Meat (an Israeli-based vegan meat company that replicates the texture and flavor of real meat). To Dr. Blutinger, Columbia's established connections with industry have allowed him to chase the research questions that he is genuinely passionate about. Therefore, in discussions with Dr. Blutinger, it was revealed how a university conducts itself with industry partners is paramount for the success of research faculty to get "their foot in the door" and get funding for their questions that can lead to patenting their research and transferring their findings from the university into the hands of the public.

At CU Boulder, this mission statement is different; “Venture Partners at CU Boulder supports researchers in translating their groundbreaking discoveries into new solutions, businesses, and partnerships that address the world’s greatest challenges.” (“Venture Partners at CU Boulder.”) According to Dr. Rivera, the university prioritizes interdisciplinary and multidisciplinary research across the university. Because faculty researchers are expected to work across disciplines and interact with different faculty members across campus, the university’s largest contributions to tech transfer have not been in healthcare or in the medical field. Importantly, as expressed by Dr. Rivera, CU Boulder does not have a medical campus on its main Boulder campus. Therefore, the majority of the University of Colorado’s IP portfolio through Venture Partners encompasses engineering innovations through engineering disciplines, like aeronautical, computer (software and hardware), chemical, electrical, civil, mechanical, environmental, and others. Ultimately, CU Boulder’s Venture Partners’ tech-transfer program prioritizes creativity and collaboration across disciplines to support innovation; a fundamental factor in why Dr. Rivera (and other researchers) choose to research at a university like CU Boulder.

Lastly, Emory’s Office of Technology Transfer’s mission statement reads: “We support the University’s mission through comprehensive management of Emory research and innovations to maximize the benefit to the University and to humanity.” (Office) Even though I extended invitations for interviews with Emory faculty or workers of the office, I was unable to speak directly with anyone at Emory about their tech-transfer office and the culture of their tech-transfer infrastructure. However, through this mission statement alone, an interesting point comes up: Emory views its position as a research institution that prioritizes both a return on investment while supporting the betterment of humanity through groundbreaking research and discoveries.

Both these discussions with research faculty, and engaging with various mission statements, reveal how different universities brand themselves as contributing to tech transfer. Ultimately, a spectrum is created: some universities prioritize tech transfer for its financial impact on their universities (as seen with Stanford and Columbia) while others prioritize their contributions to advancing humanity (as seen with CU Boulder and Georgetown). However, interestingly, for a university like Emory to encourage maximizing “benefit to the University and to humanity” in their mission statement they reveal themselves to be in the middle of the spectrum (Office). Which, as mentioned earlier, as Emory is a university that does not have an engineering school, it is understandable that their motives involve accelerating humanity. However, because their bottom line also prioritizes a return on their innovation and research investments, the university does an excellent job at branding itself to be in the position to excel at tech transfer. Additionally, as seen earlier through the 2022 AUTM survey, the work of Emory (even without an engineering school contributing to tech transfer) reveals how successful Emory is as a research institution accelerating innovation.

The spectrum of priorities from these universities highlights how each university across the country has its motivations, branding, and intentions with its tech-transfer endeavors. Therefore, it is interesting that as Georgetown’s OTC implements its first tech-transfer mission statement since the founding of the office, the statement is not unique to Georgetown and reflects the motivations behind Georgetown. Instead, the mission statement is replicated from a smaller university in New Jersey with objectively lower metrics of success than GU. As Georgetown continues to respond to the innovative challenges that are unfolding in front of the university and its lack of a diverse, sustainable technology portfolio, it is valuable that Georgetown contributes

a mission statement that correctly identifies its own unique goals and the unique challenges that face the university.

However, while the mission statement may not be entirely reflective of what Georgetown could be doing to dramatically increase its ability to succeed on a national scale for tech transfer and innovation, it is valuable that we work through the mission statement to understand if the OTC has made any strides and progress on the goals it has set out for itself just over this past year. Therefore, breaking down the mission statement to understand if the OTC is accomplishing the goals that they have set for itself is critical as Georgetown responds to its innovation challenges.

## ***Part 3: The Instruments and Mechanisms Georgetown Uses to Achieve Success***

### *3A: Breaking Down the OTC's Mission Statement*

As written, the OTC's mission statement reads as: "To advance GU's innovations through strategic alliances and new venture creation, to facilitate the translation of research breakthroughs into tangible solutions, and to cultivate a dynamic and inclusive environment for entrepreneurship. We advance this mission in support of the GU community and for the benefit of society." *("About Us."*)

### *3A1: Strategic Alliances and New Venture Creation*

First, is the OTC making progress "[to] advance GU's innovations through strategic alliances and new venture creation"? According to Dr. Tatiana Litvin-Vecknyak, before she came to Georgetown to lead as the OTC director, the office had never engaged with Georgetown's McDonough School of Business (or, the MSB) (Saunders). For a university to be successful in transferring its IP and research findings—from the university and into the hands of the public through commercialization—it seems obvious that the university would be engaging with Georgetown's business school. Therefore, Dr. Litvin-Vecknyak has been using this last year to engage with the MSB and its faculty (specifically with the help of Jeff Reid) to advocate for partnerships between the school and the office (Saunders). Namely, this semester, the OTC is launching the 'Faculty Entrepreneurship Academy' (a joint partnership between the OTC, the MSB, and Georgetown Entrepreneurship). The program had its first event on April 30th, 2024. The goal of the program is to connect faculty to the OTC's messaging, engage in events, and encourage research faculty to lean into entrepreneurship. In hearing the Georgetown Entrepreneurship and MSB director speak—Jeff Reid—he has shared his excitement for this type of partnership. Because of the success of Georgetown students using the resources of the business school to launch their ventures (as seen through Georgetown's success in the PitchBook graph as shown above), it is hopeful that research faculty will engage with the 'Faculty Entrepreneurship Academy' to inspire creativity, collaboration, and innovation. Ultimately, this strategic alliance is a critical improvement in advancing the OTC's mission statement.

### *3A2: Supporting Research Breakthrough*

Second, the OTC hopes "to facilitate the translation of research breakthroughs into tangible solutions" as read through their mission statement *("About Us."*). When Dr. Litvin-Vecknyak came to Georgetown in the Spring of 2023, the university's OTC managed over 360+ technologies (Saunders). Since this same time last year, the university's OTC has managed approximately 250 technologies. The change in the amount of technologies overseen manipulates the percentage of these technologies that are currently licensed; going from approximately 16% in 2023 to approximately 25% now in 2024. Here, Dr. Litvin-Vecknyak and the OTC team spent the year going through and breaking down each technology and criticizing its current relevance

and potential for success. By removing the technology that was not generating the success that once was hoped for, the OTC can stop attributing time, energy, and financial resources towards innovations that are likely not going to succeed. Now instead, with all the current technology that is being managed by the OTC, the current technology portfolio has been better categorized and reviewed; giving more attention to the technology that will produce successful outcomes for the OTC. Therefore, by cataloging all technology in the portfolio, the OTC can (1) better provide resources to the existing technology, (2) reduce spending on technology that is not turning over revenue, and (3) better monitor their portfolio. Moreover, when new technology is disclosed to the OTC, the team can better reference technology in its portfolio to predict the future success of a disclosure. Ultimately, the categorization of these technologies reveals that once these technologies are being monitored, the office will be able to be more responsive in leveraging its innovations to achieve success. Thus, the office is actively working to "facilitate the translation of research breakthroughs into tangible solutions" through better engagement and accountability over its tech-transfer portfolio *("About Us."*).

***3A3: A Dynamic and Inclusive Environment for Entrepreneurship***

Third, the OTC hopes "to cultivate a dynamic and inclusive environment for entrepreneurship."*("About Us."*). According to Dr. Litvin-Vecknyak, "Culture needs to evolve on all levels." (Saunders) Research faculty need to not view commercialization and tech transfer of their research as "another thing they have to do." Instead, the university as an entirety needs to promote and provide resources for faculty to be excited to engage in innovation; this of course takes time. Therefore, it is critical to separate out goals and prioritize them into short-term and long-term points for success. Immediately, to generate change, it is critical to "get more bodies participating" in OTC events, according to Dr. Litvin-Vecknyak, deep participation across the university in OTC programming will create momentum toward the OTC's goals (Saunders). As the OTC continues to build out more alliances and partnerships across the university, it is exciting to see the immediate collaboration that can generate participation through the OTC and MSB's partnership: the 'Faculty Entrepreneurship Academy'. Moreover, while engaging and building these new pilot programs that build participation, the OTC must continue to get feedback from research faculty as they continue expanding. In working with faculty—and not against, to create change—Dr. Litvin-Vecknyak believes it is critical that the OTC is adaptable and collaborative and will engage individuals to want to contribute to the OTC's portfolio (therefore, evolving the culture). Moreover, as participation increases in OTC events and programming, Dr. Litvin-Vecknyak acknowledges that it is critical to track the faculty who engage with the OTC to understand the ripple effect of the office's programming. Through monitoring faculty researchers, the OTC will have a better understanding of what contributions their office makes that can produce even more tech-transfer success stories.

Moreover, as the OTC works to "cultivate a dynamic and inclusive environment for entrepreneurship" by changing the culture of the university, it is also valuable to establish long-term goals for the programming *("About Us."*). For example, Dr. Litvin-Vecknyak cites that the OTC needs to be more engaged with how their office measures the success of their activities. Over time, Dr. Litvin-Vecknyak hopes that the office prioritizes patentability metrics in gauging their success. For example, asking: "Are more patents being issued? Which departments are contributing to patent disclosures? Which departments are not?" Again, in monitoring and asking questions about the current state of the OTC, the office can receive objective feedback that will allow for direct action to be more successful. Moreover, another long-term goal that will evolve

the innovation and tech-transfer culture for research faculty across campus is recognizing commercialization for tenure and faculty evaluations. According to Dr. Litvin-Vecknyak, the American Association of Universities—or, AAU—is advocating for this by pushing resources to college campuses and university officials (Litvin-Vecknyak). Currently, Georgetown does not recognize commercialization for tenure and faculty evaluations (Litvin-Vechnyak). Meaning, that the University pushes its faculty to "publish or perish." (Saunders, Elizabeth, and Brienne Adams)

To understand what the university is sharing to its newest faculty members on how to achieve tenure, I spoke to a first-year research faculty member—Dr. Brienne Adams—who works within the African American Studies, Computer Science, and Digital Studies Departments here at Georgetown. In our discussion, Dr. Adams shared that "in [my] first meeting with [my department heads], I was asked what my first book was going to be about. After I [explained my concept], they immediately asked what my second book was going to be about. And then they asked what articles I am currently writing. I felt confused because I wanted to accomplish one thing at a time. But I guess that is the vibes here: across my seven years working up to tenure, I have to be doing what they want me to do on their timeline." Dr. Adams went on to share how she came to Georgetown hoping to get involved with the OTC. However, those feelings have shifted as she has been feeling the pressures of being a new faculty researcher whose goal is to become tenured.

In our discussion, Dr. Adams also shared how her colleague from grad school went on to get a teaching position at Harvard, where he is working on his research right now. I connected with the Harvard professor to ask for an interview but was turned down. But, from what Dr. Adams has shared about comparing her experience to his, Harvard offers resources to faculty researchers to reduce their stress in their respective teaching positions to encourage faculty researchers to spend more time researching. For example, Harvard also uses Canvas (or, the online platform that schools like Georgetown use to connect students to their professors, homework assignments, grades, classmates, and anything else related to class activities). However, at Harvard, research faculty members who are also in teaching positions do not have to manage their Canvas class pages (an often cumbersome and time-consuming task). Instead, each faculty researcher is assigned a helper to assist in anything Canvas-related to a class for the entirety of that course. Meaning, that the research faculty member does not need to spend the extra time and energy to input grades into the system, because a helper will do it for them. Dr. Adams shared that she is "so jealous of him! I wish I got that help!" Here, it becomes clear why research faculty members at Georgetown are not excited to engage with the OTC; because as Dr. Litvin-Vechnyak has shared: research faculty view this commercialization and tech transfer of their research as "another thing they have to do." (Saunders)

Therefore, to continue promoting a cultural shift across the university to encourage tech transfer, there will need to be a dramatic and intentional shift by university officials and department heads on their respective goals. Ultimately, if the university hopes to replicate the success of universities like Stanford, Columbia, CU Boulder, Emory, or even Harvard (through Dr. Adams' testimony of her colleague), the university needs to support its faculty researchers to be innovative leaders. By respecting commercialization as a valuable result and increasing the resources available to research faculty to continue discovering and innovating, Georgetown would see that evolution "on all levels" that Dr. Litvin-Vecknyak is advocating for. Until this change happens, it will be extremely difficult for Georgetown to replicate a successful tech-transfer environment.

### *3A4: Advancing Impact for Humanity and the University*

Fourth, and finally, the last line of the Office of Commercialization's mission statement: "We advance this mission in support of the GU community and for the benefit of society." *("About Us."*). Georgetown has hit this target as they are responsible for impactful healthcare advancements; as seen through Gardasil (or, the first HPV vaccine), Allegra (one of the most used symptom relief in the world), and the CT Scanner (medical imaging that is fundamental in diagnosing patients every day). Even though a product like Gardasil is no longer on patent and funds the OTC, its significance to advancing human life while growing Georgetown's innovation landscape is infamous. With a history of producing such impactful technology that has objectively advanced society, Georgetown can replicate past success as it leans into its future of responding to innovation challenges. Moreover, Georgetown's strong and fundamental Jesuit values propel conversations across campus on how students, professors, and individuals involved in the university can contribute to the betterment of their communities. It is invaluable to continue encouraging the Georgetown community to advocate and help advance society through research and innovation.

Therefore, as we look at the metrics of success that the OTC has shared in its mission statement, it is apparent that the OTC is intentionally hitting the targets that they have outlined for itself.

## ***Part 4: Final Reflections***

### *4A: Conclusions - How Georgetown Is Responding to Innovation Challenges*

While Georgetown's OTC works to rebrand itself allows for its tech-transfer portfolio to be more diverse and sustainable—and under the expert leadership of Dr. Litvin-Vechnyak—it must be asked: is achieving the success of this mission statement reflective of what we are discussing in class? Or, explicitly, on how to respond to innovative challenges?

As discussed throughout the semester in STIA 3375-01, to respond to innovative challenges, there are five key enablers: (1) high-level focus on growth and strength, (2) sustained support for universities, (3) rapid growing funding for research, (4) support for innovative small businesses, and (5) government-industry partnerships to bring new products and services to the market (Wessner, Charles, and Joe Pasetti).

### *4A1: High-Level Focus on Growth and Strength*

Clearly, in establishing a mission statement, Georgetown is more secure and specific on its goals for tech-transfer innovation; supporting the intentional effort of the first key enabler, or "high-level focus on growth and strength." However, as discussed earlier, Georgetown's mission statement mimics one of another university. In talking with faculty researchers across the country on how their unique universities contribute to tech transfer, it is apparent that the universities that are true to their values and branding generate success. Because Georgetown's mission statement feels less directed and specific to its unique goal of needing to create a diverse and sustainable tech-transfer portfolio, the OTC could put a higher level of focus on growth and strength by rewriting a more intentional and unique mission statement. While the OTC is hitting the targets of this mission statement, it is valuable to continue to push the university to become more authentic to support its unique perspective and circumstances.

### *4A2: Sustained Support for Universities*

Moreover, if the university hopes to encourage tech transfer from its faculty researchers, those faculty researchers in teaching positions must be afforded resources that enable them to prioritize both teaching and research (as seen in the discussion between Dr. Adam and her colleague at Harvard). With an emphasis on creating sustained support for members of the university, Georgetown will be equipped to enable a response to its innovation challenge, through the second key enabler: sustained support for universities. Additionally, this support could also be reflected in supporting commercialization in the tenure review process, or advocating for faculty members to take leaves of absence without the fear of losing their jobs and offices when they come back. In changing the culture of the Georgetown community to support tech transfer, the university will continue to respond to innovation challenges (like the one it currently has of not having a sustainable or diverse patent portfolio).

### *4A3: Rapid Growing Funding for Research*

Additionally, as discussed earlier, Georgetown's innovative means for funding its OTC are respectable. However, when Georgetown prioritizes commercialization from its researchers through a cultural shift, there will be an expected adjustment to its revenue from licensing. As described earlier by the individual who provided a copy of the 2022 AUTM survey report: there is a known correlation between research expenditures (or, how much money a research institution puts into research) with its gross revenue from licensing. Across its means of funding, Georgetown has seen a significant amount of money contributed to its research, with an atypical return on that investment (when compared to other universities in the 2022 AUTM survey report). Therefore, as an outlier, by incorporating culture changes to the OTC programming—like partnerships with the business school or incorporating a mission statement—Georgetown is becoming more similar to other successful tech-transfer universities. Realistically, this would support the probability that Georgetown will become less of an outlier and more on target with other schools. Specifically, its research expenditures will begin to see a correlation with its gross revenue from licensing. Therefore, as Georgetown works to respond to its innovation challenges and has a portfolio that is both more diverse and sustainable, the university will expect to see a better correlation in future years' metrics (supporting a university to have more funding for research).

### *4A4: Support for Innovative Small Businesses*

As Georgetown responds to its innovation challenges, it is vital to view the new partnership between the OTC, the MSB, and Georgetown Entrepreneurship as a means for the university to continue to support innovative businesses. The success of Georgetown students to go on and lead successful startups is impactful enough for the university to be ranked on PitchBook's rankings. As one goes through the list of other successful universities ranked either higher or lower than Georgetown, it is hopeful to see that a university that is smaller and prioritizes the humanities (like GU) outranks larger, public, or STEM-focused universities. Therefore, there is reason to be excited about the future of Georgetown's faulty researchers to continue to contribute impactful innovations (as seen through the success of students who already engaged with the MSB throughout the years).

### *4A5: Government-Industry Partnerships*

Lastly, and as identified as a key component for Columbia's tech-transfer results—as Georgetown continues to build up its OTC to be more responsive to innovation challenges—it is fundamental that the university prioritizes its government-industry partnerships to bring new products and services to the market. Professors like Dr. Adams are funded by public partnerships, a trend that is consistent across campus. Dr. Litvin-Vechnyak shared that approximately 70% of technologies that come through the OTC come from the medical campus (Litvin-Vechnyak). Moreover, these medical campus technologies are traditionally funded by the NIH (National Institutes of Health) or the NSF (National Science Foundation) (Litvin-Vechnyak). Meaning, that the majority of technologies that the OTC manages, come from public organizations (Litvin-Vechnyak). To support a Georgetown that can successfully address innovation challenges (like diversifying its portfolio to become more sustainable) the university must engage with more private organizations and companies to support research that prioritizes impact and innovation. Additionally, Georgetown sits in a major US city that is home to both public and private organizations. It is critical to the future of Georgetown's success to lean into these organizations and form new partnerships to compete with other research institutions.

### *4B: Final Remarks - Is the OTC Successful?*

Similar to how Dr. Wessner shared how there will always be criticism of how fast or how slow the semiconductor industry is in his Fortune interview, there will be criticism towards the OTC and their timeline of success (Sloan). However, it is critical that when evaluating how successful the OTC is, it is important to consider the context. As Dr. Wessner asks: "Compared to what?" With so many conversations across the country with university professors, directors, and researchers, it is valuable to understand each university has its own unique identity and brand that it upholds. Therefore, the very definition of success varies from campus to campus.

Looking at the AUTM 2022 Survey Report, it is clear that Georgetown has not recovered from the loss of Gardasil going off-patent. Therefore, some may choose Georgetown to not be a completely successful research institution as it struggles to resolve the innovation challenge in front of them: like, how will they develop to be more diverse and create a more sustainable program in the absence of Gardasil?

Importantly, some may define "insanity [as] doing the same thing over and over and expecting different results." (Wilczek) Yet, Georgetown is not doing the same things over and over again. The university made a smart investment in a professional to advance the OTC's leadership with Dr. Litvin-Vechnyak. It was under this leadership that the university is now partnering with the McDonough School of Business, a seemingly obvious partnership that has never been seen before at Georgetown. Moreover, it was with this leadership that the OTC stopped managing nearly 100 of its technologies, to move forward and prioritize the technologies that have better potential to succeed. Ultimately, the OTC is changing to achieve different results.

While it is difficult to see immediate changes in the patentability metrics from Georgetown, it will be very exciting to see how this new leadership at Georgetown will lead. As research is time and capital-intensive—and Georgetown requires cultural changes to become more competitive to compete with other research institutions—the university sits on so much

potential to grow its role as a key innovator in driving impact for both humanity and for the university. Ultimately, it is through universities like Georgetown that innovation will continue to thrive and drive meaningful progress in various fields, shaping the future of technology, healthcare, and beyond. With the right leadership and a commitment to fostering a culture of innovation, Georgetown has the opportunity to solidify its position as a leading force in research and tech transfer (contributing to significant advancements that benefit society as a whole). As Georgetown undergoes necessary changes to enhance its competitiveness, its potential to make a lasting impact on humanity and further establish itself as a hub for groundbreaking discoveries and advancements becomes increasingly promising.

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