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May 14, 2024

The Honorable Katherine K. Vidal  
Under Secretary of Commerce for Intellectual Property and  
Director of the United States Patent and Trademark Office  
600 Dulany Street  
Alexandria, VA 22314

**RE: Comments in Response to 89 FR 18907 “Unlocking the Full Potential of Intellectual Property by Translating More Innovation to the Marketplace,” FR Doc. 2024-05504**

Dear Director Vidal:

Invent Together appreciates the opportunity to submit comments to inform the efforts of the United States Patent and Trademark Office (USPTO) to open pathways for more inventors to commercialize their inventions, particularly in green and critical and emerging technologies.<sup>1</sup> Supported by constitutionally guaranteed rights,<sup>2</sup> the genius of the American inventor allowed the United States to become a global technology superpower and is the key to maintaining our global technology leadership. American inventors developed vaccines, GPS, CRISPR, the mobile phone, the architecture of the internet, and millions of other inventions that save lives, connect people, create jobs, protect our environment, and improve quality of life. Importantly, we would be unable to enjoy the benefits of these technologies without commercialization.

However, “[a]ccess to resources to obtain the IP protection necessary to attract investment and facilitate the long-term success of entrepreneurs, to engage in technology transfer and find commercialization support, and to attain funding are not equitably available,” as the USPTO recognized in its National Strategy for Inclusive Innovation.<sup>3</sup> If the goal is to bring more innovations to market and thereby create jobs, improve economic prosperity, and solve world problems, increasing opportunities for all Americans to participate in innovation should be a key component of the USPTO’s strategy.

We commend the USPTO for its deep commitment and recent efforts to bridge these gaps and build a more equitable and inclusive innovation ecosystem. Below, we offer several specific ideas to reinforce ongoing efforts to unleash the full power of American innovation. Because developing an idea and protecting it with IP are the first steps for commercialization, our comments focus on ensuring equitable access to the resources needed to obtain patents as well as to commercialize them.

## **Background on the Inventor Diversity Gaps**

The USPTO and leading researchers have found staggering demographic disparities among U.S. inventors:

- **Gender:** Less than 13% of all inventors who hold a U.S. patent are women.<sup>4</sup> Women hold only 5.5% of commercialized patents.<sup>5</sup> Men-owned businesses are twice as likely to hold a patent as women-owned businesses.<sup>6</sup>



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- Race/Ethnicity: Black, Hispanic, multiracial, and American Indian and Alaska Native inventors make up less than 8% of U.S. inventors.<sup>7</sup>
- Income: Children in the top 1% of family income are 10 times more likely to patent in their lifetimes than children in the entire bottom half of family income.<sup>8</sup>
- Geography: Almost half of all U.S. inventors are concentrated in just 20 counties across the country.

The U.S. inventor diversity gaps are stark not only on their own but also compared to our global competitors. A 2023 World Intellectual Property Organization study found that the United States ranked 14<sup>th</sup> globally in unique women inventors on patents granted between 2016 to 2020.<sup>9</sup> The study also found that from 2001 to 2005 and 2016 to 2020, China grew its capacity of women inventors at almost double the rate of the United States—46% in China vs. 27% in the United States.<sup>10</sup> To outpace China and other foreign competitors in cutting-edge technologies, including green and critical and emerging technologies, the United States must expand innovation capacity, including by harnessing all available talent and equipping inventors with the knowledge and resources they need to invent, patent, and commercialize their inventions.

### **Key Challenges and Opportunities**

#### **IP Education (Questions 1, 11, 12)**

Patenting is complex. As the USPTO has acknowledged, applying for a patent and engaging in USPTO proceedings “requires knowledge of patent law and USPTO procedures” as well as scientific and technical knowledge.<sup>11</sup>

Numerous studies have identified IP education as a key tool for increasing the participation of women, people of color, and other historically underrepresented groups in inventing, patenting, and commercializing their inventions.<sup>12</sup> One new study found that more than 80% of potential inventors reported having minimal or no knowledge of patents.<sup>13</sup> Black and Hispanic women reported the least knowledge of patents, with 88% of Hispanic and 86% of Black women indicating they had minimal or no knowledge.<sup>14</sup>

Recognizing the need for greater access to IP education, Invent Together provides free online access to The Inventor’s Patent Academy (TIPA). TIPA was created by inventors, patent and commercialization experts, and diversity and inclusion experts to help innovators understand whether a patent is right for them and how to navigate the process, as well as options for commercialization. It also explores some of the challenges historically underrepresented inventors may face and provides tools to overcome them.

Importantly, commercialization is not an afterthought in TIPA; rather, the language of commercialization is embedded throughout the course beginning with the very first module. For example, the course explains what a license is and why an inventor might want to nest patenting and commercialization into their business plan. It also explains that a patent is an asset that can play an important role in conversations with investors. And because inventors might find it easier to relate and connect to other inventors, the course features videos of a



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diverse group of inventors sharing advice and anecdotes based on their own journeys of patenting and commercialization.

TIPA has enrolled more than 2,000 students, and the vast majority of students responding to a course survey have self-identified as belonging to an historically underrepresented group. Numerous nonprofits, professional associations, and colleges and universities (including Minority Serving Institutions (MSIs)) have adopted or promoted the course. We appreciate that the USPTO listed TIPA as an exemplary education program in the National Strategy for Inclusive Innovation<sup>15</sup> and as a learning resource for first-time patent applicants.<sup>16</sup>

We applaud the USPTO for its focus on innovation education in the National Strategy for Inclusive Innovation, and we encourage the USPTO to work with stakeholders to implement its recommendations related to expanding access to education on IP and entrepreneurship. The USPTO should also assess whether the IP education resources it designs and disseminates include information on commercialization and practical advice for navigating the patenting and commercialization processes and update them as needed. The USPTO should ensure that these resources are easily accessible online, through Patent and Trademark Resource Centers, and entrepreneurship and business development centers.

### **Legal Assistance (Questions 1, 11, 12, 15)**

In addition to being complex, the patenting process is incredibly expensive.<sup>17</sup> Research has shown that patent costs can be disproportionately prohibitive to women and people of color.<sup>18</sup> Lower earnings overall and less access to capital when they start businesses make it difficult for many women and people of color to afford the costs associated with filing a patent application, especially the expense of hiring a patent attorney.

The USPTO's Patent Pro Bono Program plays an outsized role in leveling the playing field and expanding participation in patenting by underrepresented groups. We applaud the USPTO for doubling the program budget in 2023 and for studying ways to improve the program.<sup>19</sup> We urge the USPTO to support the program at the maximum level allowed by law and to explore more flexible and reliable funding authority mechanisms with the Department of Commerce and the U.S. Congress, as discussed in the report required by the Unleashing American Innovators Act of 2022.<sup>20</sup>

The USPTO should also explore opportunities to provide free legal assistance to inventors looking to enforce, defend, or commercialize their patent rights. We applaud the USPTO for establishing the PTAB Pro Bono Program for ex parte appeals and its promise to expand the program to include inter partes review and post-grant review.<sup>21</sup> Pro bono assistance should also be available to inventors who wish to enforce their patent rights in a federal district court. Licensing patent rights also requires legal expertise, and the USPTO should explore how it can help small businesses and independent inventors access legal assistance for commercialization purposes, such as negotiating contracts and licensing agreements.



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### **Patent Examination (Questions 1, 4, 11, 12, 15)**

Accelerating the ability to gain patent protection is a crucial aspect of efforts to accelerate commercialization. We support the USPTO's First-Time Filer Expedited Examination Pilot Program, which speeds the first Office action for certain first-time patent applicants.<sup>22</sup> We appreciate that the USPTO has extended the pilot program for a second year,<sup>23</sup> and we urge the USPTO to consider extending the program beyond March 2025, and if shown to be effective, making it permanent.

We also recommend that the USPTO redouble its efforts so that applicants experience the patent examination process as more collaborative and less adversarial. Research has shown that women abandon the patenting process at greater rates after receiving an early rejection, often because they are not aware that this is a normal part of the process and that there are opportunities to work with an examiner to perfect a patent application.<sup>24</sup> The USPTO "Welcome Letter" is a helpful step toward demystifying the process,<sup>25</sup> but the USPTO should also ensure that examiners provide enhanced customer service to those who need it most. The USPTO's own research found that enhanced examination assistance (i.e., proactively offering meetings to discuss patentability and allowable claims) is highly effective, and USPTO economists suggested that it would be "ideal" to provide all patent applicants with such support, especially small and micro entities, who are less likely to have access to the legal and financial resources needed to successfully navigate the patent system.<sup>26</sup> The USPTO should work toward providing this high level of customer service to all inventors. As a first step, the Administration should support new legislation that would extend enhanced examination assistance to patent applicants without legal representation as well as small and micro entities in rural and underserved areas to promote innovation across America.

### **Facilitating Investment and Licensing Deals (Questions 1, 8, 9, 11, 12)**

Research has found that historically underrepresented inventors face multiple, compounding challenges that make it more difficult to establish commercial relationships, including insufficient access to capital and professional networks.<sup>27</sup> For example, the USPTO's National Strategy for inclusive innovation cites studies that found that 2% of venture capital (VC) was invested in startups with exclusively female founders, 1% was invested in rural entrepreneurs, 1% was invested in companies with Black founders, and less than 2% was invested in companies with Hispanic founders.<sup>28</sup>

Given the massive disparities in VC investment and critical importance of capital to commercialization, the USPTO should explore opportunities to help connect inventors with public and private investors. For example, the USPTO should consider whether it can expand Patents 4 Partnerships or create a new platform for patented inventors looking for investors and funding opportunities.

The USPTO can also play an important role in facilitating connections between inventors looking to license their patents and potential business partners. The USPTO should expand its IP marketplace platform Patents 4 Partnerships to patents across all sectors, including green and critical and emerging technologies, and advertise the platform widely to inventors and practicing entities.



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### **Expanding Technology Transfer Capacity (Questions 1, 11, 12, 13, 15)**

Another barrier to broad participation in patenting and commercialization is the quality and integration of innovation and entrepreneurship infrastructure at universities, including technology transfer offices (TTOs). This issue is particularly prevalent on the campuses of Historically Black Colleges and Universities (HBCUs) and other MSIs, many of which do not have TTOs or have underresourced TTOs.

The USPTO should help TTOs fulfill their mission to help university-based researchers patent and commercialize their inventions and teach the importance of doing so. The USPTO should focus these efforts on emerging research institutions, HBCUs, and other MSIs with under-resourced or no TTOs. The CHIPS and Science Act took important steps in the right direction by establishing a “Planning and Capacity Building Awards” program, which requires the NSF to make awards to higher education institutions, nonprofits, and partnerships between these entities and industry leaders, among other groups, to “advance the development, adoption, and commercialization of technologies.”<sup>29</sup> The \$3.1 billion authorized over five years can be used for identifying academic research with the potential for technology transfer and commercialization; providing training and support to inventors in these areas; and offsetting the costs of patenting and licensing, among other purposes.<sup>30</sup> However, Congress has appropriated no dedicated funds for this program and has appropriated just a fraction of the authorized CHIPS and Science monies for NSF research and related activities. The Administration should urge Congress to appropriate the full \$3.1 billion authorized for the program. Consistent with the recent National Strategy for Inclusive Innovation and National Advisory Council on Innovation and Entrepreneurship strategy, the Administration should also support new legislation and government incentives for establishing technology transfer coalitions composed of research universities and emerging research institutions, HBCUs, and other MSIs to strategically pool resources while sharing best practices and expanding technology transfer capacity.<sup>31</sup>

In addition, the USPTO should hold more events at HBCUs and other MSIs to spread awareness about the value of inventing, patenting, and commercialization and how to access the agency’s services and other resources available to them for these activities.

Finally, the USPTO should urge universities to include commercial patenting as a factor in promotion and tenure (P&T) decisions. Research has shown that academic inventors from historically underrepresented groups view publishing and patenting as a tradeoff, and are often rewarded in P&T for publishing but not patenting.<sup>32</sup>

### **Data and Metrics (Questions 1, 11, 12, 15)**

There is little data available on who invents and patents and even less data available on who commercializes their inventions because the USPTO does not collect demographic data from inventors, leaving researchers to rely on name-matching software and other imperfect study techniques. The data we have seen on gender and commercialized patents is more than a decade old, and we have not seen the same data for other historically underrepresented groups.<sup>33</sup> The lack of data makes it more difficult to know where to direct additional resources to expand participation in patenting and commercialization and to evaluate the success of those efforts. The Administration should work with Congress to enact the Inventor Diversity for



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Economic Advancement (IDEA) Act, which would give the USPTO the authority to establish a mechanism for inventors to voluntarily share this information with the USPTO. The USPTO should likewise encourage corporations and universities to collect data on inventor demographics, invention disclosures, which inventions are pursued and later licensed, and other relevant data to inform decision making and investments and track progress toward greater participation in inventing, patenting, and commercialization in these specific settings. The USPTO's Diversity Information Platform helpfully allows organizations to compare their workforce demographics to the demographics of the U.S. population and industry averages. However, the Platform does not include inventorship data and would be much more useful to organizations looking to improve inventor diversity and inclusion if that data was included for comparison too.

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Thank you for the opportunity to share our views on ways to unleash the full power and potential of American inventors. Invent Together looks forward to continuing to work with the USPTO to promote inclusive innovation, including by providing historically underrepresented inventors with the assistance they need to successfully patent and commercialize their inventions.

Sincerely,



Holly Fechner  
Executive Director  
Invent Together

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<sup>1</sup> Invent Together is an alliance of universities, nonprofits, companies, and other stakeholders dedicated to broadening participation in inventing and patenting. A list of Invent Together's partners can be found here: <https://inventtogether.org/about/>.

<sup>2</sup> United States Constitution. Art. I, § 8, cl. 8 ("to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive rights to their respective writings and discoveries").

<sup>3</sup> USPTO, NATIONAL STRATEGY FOR INCLUSIVE INNOVATION 8 (2024), <https://www.uspto.gov/sites/default/files/documents/NationalStrategy.pdf>.

<sup>4</sup> USPTO, PROGRESS AND POTENTIAL: 2020 UPDATE ON U.S. WOMEN INVENTOR-PATENTEES 3 (2020), <https://www.uspto.gov/sites/default/files/documents/OCE-DH-Progress-Potential-2020.pdf>.

<sup>5</sup> Jennifer Hunt et al., *Why Don't Women Patent* 1 (Nat'l Bureau of Econ. Rsch., Working Paper No. 17888 2012), <https://www.nber.org/papers/w17888>.

<sup>6</sup> EMMA WILLIAMS-BARON ET AL., INST. FOR WOMEN'S POL'Y RSCH., INNOVATION AND INTELLECTUAL PROPERTY AMONG WOMEN ENTREPRENEURS 12 (2018), [https://inventtogether.org/wp-content/uploads/C472\\_Report-Innovation-and-Entrepreneurship-7-2-18-clean.pdf](https://inventtogether.org/wp-content/uploads/C472_Report-Innovation-and-Entrepreneurship-7-2-18-clean.pdf).

<sup>7</sup> Ufuk Akcigit & Nathan Goldschlag, *Measuring the Characteristics and Employment Dynamics of U.S. Inventors* (Ctr. For Econ. Stud. Working Paper No. CES-22-43, 2022), <https://www2.census.gov/ces/wp/2022/CES-WP-22-43.pdf>.

<sup>8</sup> Alex Bell et al., *Who Becomes an Inventor in America? The Importance of Exposure to Innovation* 2 (Nat'l Bureau of Econ. Rsch., Working Paper No. 24062 2019), [https://www.nber.org/system/files/working\\_papers/w24062/w24062.pdf](https://www.nber.org/system/files/working_papers/w24062/w24062.pdf).



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<sup>9</sup> See THE GLOBAL GENDER GAP IN INNOVATION AND CREATIVITY: AN INTERNATIONAL COMPARISON OF THE GENDER GAP IN GLOBAL PATENTING OVER TWO DECADES, WIPO, <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-ds-gender-2023-en-the-gender-gap-in-global-patenting-an-international-comparison-over-two-decades.pdf> (2023); see also Holly Fechner, *To Understand Why America's Lead in Tech and Innovation Is Eroding, Look at China's Investment in Women Inventors*, FORTUNE (Apr 18, 2023), <https://fortune.com/2023/04/18/america-lead-tech-innovation-eroding-china-investment-women-inventors-holly-fechner/>.

<sup>10</sup> See *id.*

<sup>11</sup> See *Patent Process Overview*, USPTO, <https://www.uspto.gov/patents/basics/patent-process-overview#step1> (last visited May 9, 2024).

<sup>12</sup> See, e.g., ELYSE SHAW & HALIE MARIANO, INST. FOR WOMEN'S POL'Y RSCH., TACKLING THE GENDER AND RACIAL PATENTING GAP TO DRIVE INNOVATION: LESSONS FROM WOMEN'S EXPERIENCES (2021), [https://iwpr.org/wp-content/uploads/2021/07/Tackling-the-Gender-and-Racial-Patenting-Gap\\_FINAL38.pdf](https://iwpr.org/wp-content/uploads/2021/07/Tackling-the-Gender-and-Racial-Patenting-Gap_FINAL38.pdf); ELYSE SHAW & CYNTHIA HESS, INST. FOR WOMEN'S POL'Y RSCH., CLOSING THE GENDER GAP IN PATENTING, INNOVATION, AND COMMERCIALIZATION: PROGRAMS PROMOTING EQUITY AND INCLUSION VIII (2020), [https://iwpr.org/wp-content/uploads/2020/10/C471\\_Programs-promoting-equity\\_7.24.18\\_Final.pdf](https://iwpr.org/wp-content/uploads/2020/10/C471_Programs-promoting-equity_7.24.18_Final.pdf).

<sup>13</sup> See INVENT TOGETHER, THE ROLE OF TRUST IN ADVANCING EQUITY IN INNOVATION 16 (2024), <https://inventtogether.org/wp-content/uploads/The-Role-of-Trust-in-Advancing-Equity-in-Innovation.pdf>.

<sup>14</sup> See *id.*

<sup>15</sup> See USPTO, NATIONAL STRATEGY FOR INCLUSIVE INNOVATION, *supra* note 3, at 75.

<sup>16</sup> See *First-Time Filer Expedited Examination Pilot Program*, USPTO, <https://www.uspto.gov/initiatives/first-time-filer-expedited-examination-program> (under non-USPTO learning resources) (last visited May 9, 2024).

<sup>17</sup> See Invent Together, Public Comment on Study of the Patent Pro Bono Programs, Docket No. PTO-C-2023-0009, at Pages 22012-22015 (Aug. 9, 2023), <https://inventtogether.org/wp-content/uploads/Comments-in-Response-to-88-FR-22012-Study-of-the-Patent-Pro-Bono-Programs-FR-Doc.-2023-07699.pdf>.

Docket No. FDA-2021-D-1214-0023, at Pages 8–10 (Mar. 9, 2022)

<sup>18</sup> See SHAW & HESS, *supra* note 12.

<sup>19</sup> See USPTO, UNLEASHING AMERICAN INNOVATORS ACT OF 2022: STUDY OF THE PATENT PRO BONO PROGRAMS (2023), [https://www.uspto.gov/sites/default/files/documents/FINAL\\_SignedUSPTOStudyUAIAPatentProBonoProgram.pdf](https://www.uspto.gov/sites/default/files/documents/FINAL_SignedUSPTOStudyUAIAPatentProBonoProgram.pdf).

<sup>20</sup> See *id.*

<sup>21</sup> See Press Release, *USPTO Launches PTAB Pro Bono Program*, USPTO (Mar. 24, 2022), <https://www.uspto.gov/about-us/news-updates/uspto-launches-ptab-pro-bono-program> (“The program will later expand to include AIA Trials.”).

<sup>22</sup> See *First-Time Filer Expedited Examination Pilot Program*, *supra* note 16.

<sup>23</sup> See Press Release, *USPTO Extends Successful Pilot Program Helping First-Time Patent Filers*, USPTO (Mar. 8, 2024), <https://www.uspto.gov/about-us/news-updates/uspto-extends-successful-pilot-program-helping-first-time-patent-filers>.

<sup>24</sup> Gauri Subramani et al., *Try, Try, Try Again? Persistence and the Gender Innovation Gap*, <https://haas.berkeley.edu/wp-content/uploads/Try-try-try-again-Persistence-and-the-Gender-Innovation-Gap.pdf>; see also SHAW AND MARIANO, *supra* note 12, at 8 (describing inventors' confusion about what it means to receive a USPTO rejection).

<sup>25</sup> See Press Release, *New USPTO “Welcome Letter” Seeks To Demystify Patent and Trademark Process Early On by Providing Applicants Helpful Information on Free Trainings, Resources*, USPTO (Aug. 10, 2023), <https://www.uspto.gov/about-us/news-updates/new-uspto-welcome-letter-seeks-demystify-patent-and-trademark-process-early>.

<sup>26</sup> Nicholas A. Pairolero et al., *Closing the Gender Gap in Patenting: Evidence from a Randomized Control Trial at the USPTO* 4, 20–22 (USPTO Econ. Working Paper No. 2022-1).



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<sup>27</sup> See, e.g., SHAW AND MARIANO, *supra* note 12; SHAW & HESS, *supra* note 12; MILLI ET AL., INST. FOR WOMEN'S POL'Y RSCH., EQUITY IN INNOVATION: WOMEN INVENTORS AND PATENTS (2016), <https://iwpr.org/wp-content/uploads/2020/12/C448-Equity-in-Innovation.pdf>.

<sup>28</sup> See USPTO, NATIONAL STRATEGY FOR INCLUSIVE INNOVATION, *supra* note 3, at 57.

<sup>29</sup> CHIPS and Science Act, Pub. L. No. 117-167 (2022).

<sup>30</sup> See *id.*

<sup>31</sup> See USPTO, NATIONAL STRATEGY FOR INCLUSIVE INNOVATION, *supra* note 3, at 59–60.

<sup>32</sup> See, e.g., SHAW AND MARIANO, *supra* note 12.

<sup>33</sup> See Hunt, *supra* note 5.

