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REPORT OF THE ROUNDTABLE ON ISSUES RELATING TO PATENT INVENTORSHIP AND OWNERSHIP WITH RESPECT TO UNIVERSITY INVENTIONS AND THEIR IMPLICATIONS FOR TECHNOLOGY TRANSFER

Document prepared by the Secretariat

1. A roundtable on issues relating to patent inventorship and ownership with respect to university inventions and their implications for technology transfer (hereinafter: the roundtable) was held on October 17, 2024, at the World Intellectual Property Organization (WIPO) Headquarters in Geneva as one of the activities organized by the Secretariat under the transfer of technology agenda item at the thirty-sixth session of the Standing Committee on the Law of Patents (SCP).[1]

2. It should be recalled that, based on the information submitted by Member States, a study on patent inventorship and ownership issues arising from collaborative research and cross-border collaboration and their implications for technology transfer (SCP/36/9), prepared by the Secretariat, was discussed at the thirty-sixth session of the SCP.

3. Further to that study, the Secretariat organized the roundtable and invited technology transfer experts to address issues relating to patent inventorship and ownership with respect to university inventions and their implications for technology transfer, including the creation of spin-offs and startups. The report on the roundtable can be found below.

INTRODUCTION

4. The main objective of the roundtable was to provide Member States and observers with a platform to share their experiences regarding patent inventorship and ownership with respect to

[1] The agenda and the presentations delivered during the roundtable discussion are available on the SCP webpage at: https://www.wipo.int/meetings/en/details.jsp?meeting_id=80917.

university inventions and their implications for technology transfer. Member States had also expressed a strong interest in hearing from experts in the context of the roundtable.

5. The roundtable was moderated by Mr. Michael Mbogoro, Head of the Technology Transfer Section within the Intellectual Property for Innovators Department (IPID) at WIPO and consisted of a panel of three experts in the field:

i. Mr. Stephen Susalka, Chief Executive Officer, Association of University Technology Managers (AUTM), United States of America;

ii. Ms. Anita Nel, Chief Director, Innovation and Commercialization, Stellenbosch University, South Africa; and

iii. Ms. Rachel Grovenor, Licensing and Ventures Manager, Oxford University Innovation (OUI), United Kingdom.

PRESENTATIONS

OPENING

6. The roundtable was opened by the moderator, Mr. Michael Mbogoro. In his opening remarks, he highlighted the importance of contextualizing the discussion on technology transfer, acknowledging that the term may be subject to different interpretations depending on the audience. He noted that, for some, technology transfer referred to the movement of technologies between countries or Member States, and was often linked to discussions on how developed nations can facilitate the transfer of essential technologies to other regions. He also referenced business-to-business technology transfer and cited the Medicine Patent Pool (MPP); large pharmaceutical companies licensed their technologies to that intermediary, which had the right to sublicense, in order to improve global access to medicines. However, he clarified that the focus of the roundtable was on technology transfer between universities and society, including collaborations between academia and industry and other mechanisms that enabled innovations developed by universities to be commercialized and to have a societal impact.

Panelist 1 – Mr. Stephen Susalka

7. Mr. Stephen Susalka provided an in-depth analysis of technology transfer and its critical role in transforming intellectual property (IP) into commercial products and services. His intervention emphasized how university and public-sector research contributed to innovation and economic development by bridging the gap between early-stage discoveries and market-ready solutions.

8. He highlighted that technology transfer played a vital role in daily life, with innovations emerging from research institutions shaping various industries. He cited examples such as Allegra (Telfast) for allergies, Siri for voice recognition, and the N95 mask, all of which originated in university-led research before being transferred to industry partners for commercialization. Those cases illustrated the broad societal impact of technology transfer and served to emphasize the importance of structured IP frameworks.

9. A key aspect of the presentation was an overview of the technology transfer process. While universities invented technologies, their structures did not enable them to bring products to market directly. Instead, technology transfer offices (TTOs) were responsible for:

i. Evaluating innovations developed through university research;

ii. Securing legal protections, typically through patents; and

iii. Licensing technologies to companies that were able to commercialize them.

10. That process, he explained, ensured that scientific breakthroughs were transformed into real-world applications that benefited both society and the economy.

11. Mr. Susalka also highlighted data from AUTM, which had tracked technology transfer activities since 1991. The most recent data, from 2023, indicated that United States institutions had collectively invested $105 billion in research, leading to approximately 25,000 new inventions. He emphasized that there was a direct correlation between research investment and innovation output, demonstrating how sustained funding served to drive technological progress.

12. An important point raised was the role of startup companies in advancing early-stage technologies. While many innovations were licensed to established firms, a growing number were commercialized through university spin-outs. Data indicated that around 1,000 startups were formed annually in the United States to develop technologies that had originated in research institutions, contributing to job creation and economic growth.

13. Mr. Susalka also discussed the historical impact of the Bayh-Dole Act of 1980, which redefined technology transfer in the United States. Prior to the Act, federally funded inventions were owned by the government, limiting commercialization opportunities. The Bayh-Dole Act allowed universities to retain ownership of those innovations, significantly increasing the number of patents, licenses, and startup formations over the previous four decades. He noted that, while the United States system was largely based on institutional ownership of IP, other countries followed different models, such as the professor's privilege, where individual researchers retained the rights to their inventions.

14. With regard to cross-border collaborations and IP ownership, in the United States, inventors listed on a patent had undivided rights, meaning that any co-inventor could license the entire patent without requiring consent from the other inventors. That contrasted with systems in other jurisdictions, and presented both opportunities and challenges for international partnerships in technology commercialization.

15. Looking to the future, Mr. Susalka emphasized key trends that were shaping the evolution of technology transfer, including:

i. Expansion beyond patent licensing, with increased use of copyright and other types of IP in the commercialization process;

ii. The strengthening of IP protection systems and recognition of the link between strong IP rights, economic growth, and national security;

iii. The enhancement of diversity in the innovation ecosystem, ensuring that underrepresented inventors had greater access to commercialization resources; and

iv. Recognition of technology transfer as an economic driver, with growing contributions from university-led startups and global innovation networks.

Panelist 2 – Ms. Anita Nel

16. Ms. Anita Nel provided an in-depth perspective on technology transfer from the viewpoint of Stellenbosch University, South Africa, focusing on the unique challenges and opportunities in the region. Her intervention highlighted the role of universities in driving innovation; the regulatory framework governing IP in South Africa; and the evolving commercialization strategies adopted to navigate industrial and economic constraints.

17. She began by drawing attention to the demographic landscape of Africa, which was considered to be the “youngest” continent, with half of its population under the age of 20. She added that such a reality had profound implications for universities, as they must accommodate increasing numbers of students while also fostering research and innovation.

18. She provided an introduction to Stellenbosch University, a research-intensive institution located near Cape Town. It was ranked among the top 350 universities globally, and had a student population of 35,000, of which one-third were postgraduates. The high proportion of postgraduate students reflected the University’s strong focus on research and technology transfer.

19. A key feature of Ms. Nel’s intervention was an analysis of South Africa’s innovation ecosystem. She presented data that were based on published Patent Cooperation Treaty (PCT) applications with a view to better capturing the inventions themselves, and not necessarily the number of patents associated with those inventions. The data revealed that while the public sector was leading innovation in South Africa, universities played a dominant role in patenting and commercialization.

20. She further outlined the two primary pathways for commercializing university-developed patents:

i. Licensing or assigning the IP to external companies; and

ii. Creating spin-out companies to develop and commercialize the technology.

21. Ms. Nel illustrated her presentation with data from Stellenbosch University’s spin-out timeline (1998–present), which demonstrated a sharp increase in spin-out activity after 2014, following the establishment of a business incubator on campus. While the initiative had significantly accelerated commercialization efforts, it had also placed a heavy resource burden on the University’s TTO due to the complex process of establishing, supporting and funding startups.

22. A major part of Ms. Nel’s presentation centered on South Africa’s Intellectual Property Rights from Publicly Financed Research and Development Act, 2010, which governed IP emanating from publicly funded research. One of the most significant changes brought about by the Act was the establishment of the National Intellectual Property Management Office (NIPMO) under the Department of Science and Technology. NIPMO played a critical role in terms of regulation and support.

23. Subsequently, Ms. Nel identified several challenges faced by universities in managing and commercializing IP, such as identifying inventors and contributors who participated in long-term research projects involving multiple collaborators; complexities in co-ownership agreements; and the industry’s reluctance to accept IP ownership by universities, which had initially been perceived negatively, but which had gradually gained acceptance over the previous 14 years.

24. Another major challenge shared by the panelist related to South Africa’s limited industrial ability to absorb and develop early-stage university technology, making it difficult to commercialize such technology at the local level. As a result, many promising innovations needed to be licensed to foreign companies. That lead to value creation outside of South Africa, with universities receiving only a small share of the financial returns.

Panelist 3 – Ms. Rachel Grovenor

25. Ms. Rachel Grovenor provided insights into the role of technology transfer at the University of Oxford and the broader challenges of inventorship and IP ownership in academic research. She highlighted the evolving culture of collaboration between industry and academia;

the impact of national research policies; and the complexities surrounding IP ownership in multi-institutional and international projects.

26. United Kingdom universities had a long-standing tradition of partnering with industry, particularly in fields such as engineering and medical sciences, where research directly addressed real-world challenges. Over the previous two decades, a significant cultural shift had occurred within academia. Previously, researchers had been less inclined to engage in commercialization efforts. However, collaboration between spin-out companies and industry had come to be seen as an aspirational career move, rather than a divergence from pure research. That shift had been reinforced by the Oxford University Innovation (OUI) TTO, established to maximize the global impact of the research of the University of Oxford. OUI had played a pivotal role in guiding academics through patent filing, licensing, and spin-out formation, ensuring that their discoveries were translated into marketable innovations.

27. A key driver of that cultural change had been the United Kingdom's Research Excellence Framework (REF), which assessed the quality and impact of academic research and determined how the government distributed a £2 billion annual funding pool. REF had elevated the importance of research impact, particularly for technology transfer. The impact criterion, which assessed the real-world benefits of research beyond academia (e.g. in health, public policy, industry, or the environment), was weighed at 20 per cent in 2014 and had increased to 25 per cent in 2021. That shift had incentivized universities to actively engage in technology transfer and to demonstrate the tangible benefits of their research outputs.

28. To exemplify the approach of the University of Oxford to commercializing university research, Ms. Grovenor presented two case studies:

i. Oxford Knee Score: a patient-centered clinical assessment tool for evaluating recovery after knee replacement surgery. By eliminating reliance on the subjective judgements of doctors, the tool had improved global health-care outcomes and was licensed worldwide in multiple languages through OUI.

ii. OrganOx: a university spin-out that developed normothermic machine perfusion, a technology that preserved donated livers for up to 24 hours outside of the body, significantly increasing transplant success rates. The innovation led to a 50 per cent reduction in discarded livers and was recently approved by the United States Food and Drug Administration (FDA), making it a flagship example of the technology transfer success of the University of Oxford.

29. Those examples demonstrated the broad scope of impact, particularly in the medical sciences, though similar success stories existed across engineering, computer science, chemistry and physics. OUI published an annual impact report showcasing the commercialization of diverse research fields.

30. Ms. Grovenor provided an overview of the technology transfer ecosystem of the University of Oxford, which was the largest in the United Kingdom, and was structured to support researchers at various stages of commercialization. She shared information on the following key teams:

i. The Licensing and Ventures Team, which handled new patent filings, software commercialization, and spin-out formation;

ii. The Consulting Services Team, which facilitated industry collaboration when no formal IP rights were involved, connecting academics with companies seeking expertise-driven solutions; and

iii. The Investments Team, which managed the University's equity holdings in spin-out companies, provided funding, and supported young ventures through mentorship and strategic advice.

31. Furthermore, the financial model in place ensured that revenue from IP commercialization was shared between inventors and contributors, their academic departments and the strategic fund of the University, which supported large-scale research initiatives on topics such as the ethics of artificial intelligence and climate change. That system continuously reinvested in the University's innovation ecosystem, ensuring that success in commercialization fueled further research and societal impact.

32. In her presentation, Ms. Grovenor identified IP ownership complexities as one of the biggest bottlenecks in commercializing university research. The main challenges often included distinguishing between inventorship and authorship, complications arising from collaborations and funding sources, divergent global IP laws, and administrative hurdles in patent filing.

33. Turning to the distinction between inventorship and authorship, Ms. Grovenor noted that academic conventions often blurred the lines between the two concepts, creating challenges in the patenting process. In academic publishing, it was common for multiple contributors to be included as co-authors on research papers, even if their role was limited. That practice was frequently motivated by academic culture, in which senior figures were often added to publications as a sign of respect, and collaborative acknowledgments enhanced the perceived impact of research. However, inventorship on a patent was legally distinct, as it required a material contribution to the technical solution being claimed. The misalignment between those two systems could lead to incorrect inventorship claims, which may in turn result in disputes over IP ownership. Ensuring that academics fully understood that distinction was crucial to preventing future legal and commercial complications.

34. With respect to IP ownership in collaborative research projects, determining ownership was often complex due to the variety of institutions, funding sources and legal agreements involved. She noted that, within a single research group, different researchers may be funded by separate grants, private sponsors, or government programs, each of which imposed specific conditions regarding IP ownership. As a result, even within the same project, one researcher may be contractually obligated to assign their IP rights to the University, while another may be subject to an external agreement with an industry partner or funding agency. That fragmentation complicated efforts to centralize IP rights for commercial licensing, and extensive legal reviews were often required in order to clarify ownership structures before technology could be brought to market.

35. On the issue of cross-border IP laws and co-ownership regulations, diverging legal frameworks created significant obstacles to international collaborations. Under United States patent law, each co-owner of a patent had the right to license it independently, whereas under United Kingdom patent law, co-owners must obtain mutual consent before making any modifications or licensing agreements. The latter could create deadlock situations in cases where co-owners had differing commercialization interests, particularly if a university wished to license IP to multiple companies and an industry partner sought exclusive control over commercialization. The differences in those legal systems increased negotiation complexities and delayed commercialization efforts.

36. Ms. Grovenor also discussed the administrative challenges associated with patent filing, particularly within academia, where researchers were under significant pressure to publish their work quickly. Securing a priority date for a patent application before public disclosure was a primary concern, as journal publications, conference presentations or informal discussions could invalidate patent claims if not managed carefully. However, such urgency often clashed with the logistical difficulties of securing signatures for IP assignments, particularly when researchers

moved institutions or when collaborations involved multiple jurisdictions. In some cases, a researcher who was a postdoctoral fellow at the time of an invention may have moved to a different country by the time national patent filings were required, making it difficult to track them down for legal documentation. Such bureaucratic hurdles caused some of the biggest delays to commercializing university-developed IP.

37. Finally, Ms. Grovenor addressed the challenges of tracking inventorship throughout the patent prosecution process, particularly when amendments to patent claims altered the list of contributors. In the United States, if certain claims were removed from a patent application, any inventor who contributed solely to those claims must also be removed from the inventor list. However, that rule did not apply universally in other jurisdictions, where inventorship did not change based on claim modifications. Such inconsistencies added another layer of complexity for TTOs managing international patents, as they must continuously reassess inventorship in response to evolving patent claims.

QUESTIONS TO PANELISTS

38. Following the presentations by the panelists, the moderator thanked the speakers for their insightful contributions and initiated the question-and-answer segment by posing questions to the experts on the panel before opening the floor for general discussion.

39. The moderator first addressed Mr. Stephen Susalka with a question regarding the observed gap between public investment in research and the tangible societal benefits resulting from that research. He asked what measures, particularly at the government level, could be taken to improve the conversion of publicly funded research outputs into innovations that reached the market and benefited society.

40. In response, Mr. Susalka drew attention to three critical stages of the technology transfer pipeline: research, invention, and commercialization. He then highlighted the points of friction at each stage. He stressed the importance of sustained research funding; fostering a campus culture that valued innovation and commercialization; and increasing institutional capacity through the training and support of technology transfer professionals. Government investment was necessary in “de-risking” early-stage technologies, including through prototyping and demonstration funding, to make them more attractive to private sector uptake. He cited United States programs like Small Business Innovation Research (SBIR) grants as examples of such mechanisms.

41. Building on the theme of de-risking, the Chair invited Ms. Rachel Grovenor to elaborate on the approach of the University of Oxford, noting that it may offer a model for others. Ms. Grovenor explained that, although the University was fortunate to have a mature innovation culture and a large TTO, de-risking remained a major challenge. She described how the University leveraged both national translational funds and internal evergreen funds to support the development of early-stage inventions, helping to bridge the gap between research prototypes and market-ready products. While the process was labor- and resource-intensive, even modest investments in prototyping and validation could significantly improve commercialization prospects.

42. Mr. Susalka further added a real-world example to illustrate how a relatively small prototyping investment at his former institution had transformed a paper-based concept into a viable product that had attracted commercial interest. The story underscored the potential impact of targeted de-risking expenditures on the success of technology transfer initiatives.

STATEMENTS MADE FROM THE FLOOR

Delegation of Canada

43. The Delegation of Canada thanked the panelists for their informative and educational presentations, emphasizing that each intervention highlighted the significant economic impact of effective technology transfer on the innovation ecosystem. The Delegation expressed particular interest in understanding the pain points and friction within the patent system, which had been discussed during the session.

44. Addressing Ms. Nel, the Delegation acknowledged the challenges faced by TTOs, particularly in managing long research timelines, where findings were often published before patent applications could be filed. They inquired as to the extent to which pre-filing publications impacted technology transfer efforts at Stellenbosch University, and asked how frequently TTOs became aware of such publications in advance. Additionally, Ms. Nel's perspective was sought on the potential benefits of a robust grace period, and on whether such a measure could help universities to navigate the patent system more effectively and ultimately enhance technology transfer outcomes. The input of other panelists on that issue was also welcome.

Response by Ms. Nel

45. In response to the question from the Delegation of Canada, Ms. Nel acknowledged that addressing pre-filing publications required a significant paradigm shift at her institution. She explained that, following the enactment of technology transfer legislation, the University prioritized educating staff on the importance of IP management. A key initiative was the adoption of the slogan "patent before you publish", aimed at raising awareness among researchers about the need to secure patent protection prior to public disclosure.

46. Ms. Nel further emphasized that the University fully supported academic publishing and encouraged researchers to share their findings widely. At the same time, strategic patenting before publication enhanced the credibility and impact of an invention. Although the issue had been significantly more prevalent 10 years previously, awareness and sensitivity around IP protection had significantly improved. Researchers now had a better understanding of the value of IP, how to manage it, and how to engage with the TTO.

47. Despite the progress made, occasional challenges remained. During the due diligence reviews conducted prior to patenting, it was still common to discover that a researcher had inadvertently created their own prior art, potentially compromising patentability. While some countries, such as the United States, offered a grace period, that was not the case in South Africa. Implementing a grace period in South Africa and additional jurisdictions would be highly beneficial in mitigating the risks associated with pre-filing publications.

Delegation of Trinidad and Tobago

48. The Delegation of Trinidad and Tobago thanked the moderator and the panelists for their insightful presentations, describing them as inspiring, particularly the intervention by Ms. Grovenor on medical technology. While technology transfer frameworks and structures were often praised once they were fully operational, significant efforts were required to proceed to their establishment. The Delegation inquired as to whether there were specific events, crises, or pivotal moments that had acted as catalysts for the development of technology transfer policies and legislation, particularly in South Africa and the United States. They were interested in understanding whether any seismic events had occurred to spur action, prompting governments and institutions to prioritize legislative or structural changes in order to facilitate technology transfer. They invited the panelists to comment on what drove the establishment of those systems and how the related challenges were addressed.

Response by Mr. Susalka

49. In response to the question on the crises that had led to the establishment of technology transfer frameworks, particularly in the United States, Mr. Susalka explained that, prior to the enactment of the Bayh-Dole Act in 1980, the United States government had commissioned a study to evaluate the effectiveness of its publicly funded research system. The study had aimed to assess why, despite significant government investment in research, there appeared to be limited commercialization outcomes.

50. The findings of the study had revealed two critical insights. First, not a single federally funded innovation, for which the rights had been taken from the inventing institution and managed by the government, had successfully resulted in an FDA-approved drug. That indicated that valuable innovations were failing to progress beyond the research phase, effectively hitting a commercialization bottleneck. Second, an analysis found that only five per cent of federally funded innovations were ever commercialized. While achieving a 100 per cent commercialization rate was unrealistic, a five per cent success rate was seen as alarmingly low, suggesting that United States-based innovation was being stifled by restrictive policies on IP ownership and commercialization rights.

51. The abovementioned findings had led to the realization that public funding for research was not translating into tangible societal benefits, as inventing institutions lacked control over the commercialization process. Consequently, the Bayh-Dole Act had been introduced, allowing universities and research institutions to retain the rights to their federally funded inventions, incentivizing them to actively engage in technology transfer. The legislative shift had triggered an unprecedented wave of commercialization, leading to the creation of numerous companies, new products, and broad societal impact. Moreover, since the passage of the Bayh-Dole Act, the United States innovation landscape had continued to expand, demonstrating the long-term benefits of enabling universities to drive the commercialization process.

Delegation of Brazil

52. The Delegation of Brazil thanked the moderator for the opportunity to participate in the panel discussion. Issues such as inventorship, ownership, and the challenges of capturing knowledge in its pre-commercial phase significantly impacted the diffusion of knowledge and the spread of innovation, particularly in developing countries and least developed countries. In reference to the intervention made by their delegation on technology transfer the previous day, the Delegation reiterated that the relationship between IP and technology transfer played a crucial role in determining access to advanced technologies.

53. The Delegation also highlighted that IP rights often acted as a barrier to technology transfer from developed to developing countries, particularly in sectors such as public health and the supply of essential goods during emergencies. Under the current system, IP rights could limit access to critical innovations by imposing cost barriers, restricting voluntary licensing agreements and reinforcing monopoly control over essential technologies.

54. In terms of cost barriers and monopoly control, strong IP rights regimes enabled patent holders – often multinational corporations from developed countries – to maintain exclusive control over critical technologies, including essential medicines and health-care technologies. Such control allowed patent owners to set high prices for licensing, making it difficult for developing countries to afford access to those technologies. The Delegation referenced a study by the United Nations Development Programme and the Joint United Nations Programme on HIV/AIDS, which had found that patent monopolies significantly inflated costs, with prices for patented medicines in low-income countries being up to 30 times higher than generic alternatives, severely limiting access to life-saving treatments.

55. With regard to voluntary licensing limitations, the Delegation pointed out that, even when voluntary licensing agreements were in place, they often included restrictive conditions that limited where and how the technology could be used. Many such agreements failed to meet the broader public health needs of developing countries, particularly when related to essential medicines. Moreover, a 2021 report by the Medicines Patent Pool had found that 40 per cent of voluntary licensing agreements imposed geographical restrictions, effectively excluding many low- and middle-income countries from access to generic medicines.

56. The Delegation said that the coronavirus disease (COVID-19) pandemic had starkly demonstrated the inequalities in technology access, which could be attributed to patent barriers and the reluctance of technology holders to engage in technology transfer agreements. Such barriers highlighted the need for more flexible licensing arrangements and IP reforms, particularly in the event of global health emergencies.

57. The Delegation concluded that, while IP rights were designed to promote innovation, they could also restrict the free flow of technology, making it difficult for developing countries to respond effectively to public health crises and other essential needs. Addressing those barriers would require a review of existing IP rights frameworks, particularly during health emergencies, while also encouraging more flexible licensing agreements to ensure equitable access to vital technologies. The Delegation then asked the panelists whether the complex arrangements governing knowledge in its pre-commercial phase could be reconsidered to better support innovation and ensure timely access to essential technologies, particularly in emergency situations.

Response by Mr. Susalka

58. In response to the Delegation of Brazil, Mr. Susalka acknowledged the delicate balance between protecting IP to incentivize innovation and ensuring equitable and appropriate global access to essential technologies. While progress had been made, there was still room for improvement in order to strike an effective balance.

59. Mr. Susalka highlighted one initiative aimed at facilitating broader access to publicly funded innovations: the Nine Points to Consider in Licensing University Technology, endorsed by the AUTM. He explained that the AUTM represented public sector research institutions, and that the framework provided guidelines on how licensing agreements could incorporate mechanisms to enhance the dissemination of IP worldwide. While that approach was one way to address the concerns raised by the Delegation of Brazil, other mechanisms could also be explored to further improve global access to critical innovations. He also referenced the United Kingdom's REF, which placed a strong emphasis on research impact. He suggested that frameworks like the REF, which assessed how publicly funded research contributed to society, the economy, and global challenges, encouraged institutions to prioritize equitable access and broader dissemination of their innovations.

Response by Ms. Grovenor

60. Also responding to the Delegation of Brazil, Ms. Grovenor spoke of the challenges related to balancing commercial licensing agreements with equitable global access, particularly in the pharmaceutical and medical technology sectors. When negotiating licensing agreements with large companies responsible for manufacturing and sales, universities often attempted to introduce differentiated royalty rates across jurisdictions. Such an approach allowed for lower or even zero royalty rates in certain regions, ensuring that essential technologies could be made available at cost price in developing markets. While that approach could serve as a starting point in negotiations, it was not always a non-negotiable condition. In cases where there were other contentious issues in a licensing agreement, universities may have to deprioritize equitable pricing conditions to reach a final deal with the company. Universities could improve

in that area, with institutions taking a firmer stance on maintaining access provisions in licensing contracts rather than allowing them to be removed during negotiations.

61. Turning to university spin-outs, Ms. Grovenor highlighted the funding disparities that arose when attempts were made to develop medical technologies for the developing world. She provided an example of a non-invasive, handheld device for assessing anemia, which eliminated the need to draw blood and the consequent delays in diagnostic results, making it highly beneficial for low-resource health-care settings. However, securing investment in developing the device specifically for use in developing countries had proven extremely difficult. Conversely, securing funding to develop the same technology for the United States market, where it could be sold at a high price, had been far easier.

62. Ms. Grovenor emphasized that university TTOs ultimately followed the lead of academic inventors. If researchers insisted on prioritizing applications for the developing world, the university would support that goal. However, in cases where academics were open to commercializing their technology in more profitable markets first, the university would take the commercially viable route. While the intention to ensure equitable access existed, financial realities often led to developing-world applications being postponed or deprioritized. Universities and TTOs could make improvements in that area, potentially by pursuing alternative funding models, or by prioritizing social impact in spin-out development strategies.

Delegation of Chile

63. The Delegation of Chile began by thanking the panelists for their insightful presentations and highlighted the importance of strengthening the patent ecosystem in Chile. Chile was actively working to maximize the use of public funds for technology development, and a new law on technology transfer was currently under discussion in the Chilean Parliament.

64. In that context, the Delegation asked to hear the views of the panelists on the role of the private sector in licensing arrangements, particularly in relation to essential technologies. Private sector approaches to IP often prioritized commercial interests, which could create barriers to access technologies that may have broader societal benefits. They also asked whether the panelists had identified any specific strategies or approaches that could help mitigate the restrictive effects of private sector licensing practices. They also sought insights into how licensing models could be adjusted to encourage greater openness and accessibility, while still ensuring that companies had the necessary incentives to engage in technology transfer agreements. They were particularly interested in whether any policy mechanisms or best practices had been successfully implemented to facilitate licensing for essential technologies, making them more widely available while balancing commercial and public interest considerations.

Response by Ms. Nel

65. In response to the Delegation of Chile, Ms. Nel addressed the challenges related to private sector licensing and its impact on essential technologies. She made reference to the affirmation by Lita Nelsen, the former director of technology transfer at the Massachusetts Institute of Technology (MIT), that a “hot” university technology was one that attracted the interest of at least two companies, which highlighted the importance of collaboration in driving technology transfer and commercialization. While university-developed technologies had the potential to be transformative, they were often at an early stage of development, and required further investment, refinement and validation before they could reach the market. In many cases, that process relied on partnerships with commercial entities, as companies brought the expertise, resources, and infrastructure needed to advance the technology. Enhanced collaboration between universities and industry, including education on the benefits of open

innovation, was crucial to ensuring that essential technologies were developed, scaled up and made accessible to the public.

Knowledge Ecology International

66. The Representative of Knowledge Ecology International (KEI) shared a personal perspective on the impact of publicly funded medical innovations. His wife had been treated with a cancer drug developed prior to the Bayh-Dole Act. Even before the Act had been passed, the United States federal government had played a significant role in funding cancer therapies, and many of those treatments had eventually reached the market. Citing early National Institutes of Health studies, the Representative highlighted that between the 1950s and 1991, approximately 80 per cent of cancer drugs that were approved in the United States had received some form of public research funding.

67. Turning to the discussion on university patent commercialization, the Representative referenced a statement made by a panelist from AUTM, who had estimated that only around 5 per cent of university patents were successfully commercialized. The Representative expressed curiosity about the actual commercialization rate of university-filed patents, particularly given that a search for United States patents held by universities yielded well over 100,000 patents. They asked what percentage of those patents ultimately resulted in commercial products, acknowledging that the number was likely to be relatively low.

68. The Representative further noted that the difficulty of translating patents into commercial products applied regardless of the source of research and development funding, whether from the private sector, the federal government, or a combination of both. The Representative agreed with the panelists that moving from a patentable invention to a viable commercial product was inherently challenging, requiring extensive investment, development, and market adaptation. Lastly, in reference to the remarks made by Ms. Nel, they suggested that the popularity of university-generated innovations remained relatively low, which reinforced the broader difficulties faced in bridging the gap between academic research and market applications.

Response by Mr. Susalka

69. In response to the statement made by the Representative of KEI on the commercialization rates of university patents, Mr. Susalka acknowledged the challenges of translating early-stage university innovations into commercial products. On average, the number of licensees per university technology was between 0 and 1, rather than higher figures such as 12 or 17, which highlighted the difficulty in securing industry partners for university-generated IP.

70. Mr. Susalka agreed that, while valuable innovations were continuously being developed at universities worldwide, the resource-intensive nature of commercialization meant that not all of them could be successfully brought to market. While the ideal goal would be to commercialize 100 per cent of university inventions, that remained an incredibly difficult target. Instead, the focus should be on steadily increasing commercialization rates, moving from 5 per cent to 7 per cent, and then to 10 per cent and beyond, to ensure that more innovations reached the public and generated societal impact.

71. He reiterated that commercializing early-stage innovations was inherently challenging, a view that was likely to be shared by his fellow panelists. Despite those challenges, investing time and effort in technology transfer remained essential, as each successfully commercialized invention contributed towards innovation, economic growth and public benefits.

Third World Network

72. The Representative from the Third World Network took the floor to pose three interconnected questions to the panelists regarding the financial sustainability of TTOs, the role of the University of Oxford TTO in COVID-19 vaccine technology transfer, and the relevance of TTOs in the case of small-molecule medicines.

73. The first question focused on the financial operations of TTOs, and specifically on how many TTOs operated on a surplus budget when comparing expenditures to revenues. The Representative sought clarification on whether surplus revenue was typically generated across a diverse portfolio of licenses or predominantly from a small number of highly successful agreements, given the low percentage of inventions that reached the commercialization stage.

74. The second question, directed to the University of Oxford TTO, sought to clarify whether the office was involved in technology transfer related to the COVID-19 vaccine. The Representative also asked whether the University of Oxford received royalties from the licensing of its vaccine technology, given the global significance of the development and distribution of COVID-19 vaccines.

75. The final question related to the broader role of IP in technology transfer, particularly in the context of small-molecule medicines. The Representative argued that patents on small molecules could sometimes act as a barrier to technology transfer, rather than facilitating it. They asked whether TTOs still considered themselves to play a meaningful role in the technology transfer of small-molecule medicines, or whether such cases diminished the necessity of TTO-mediated technology transfer processes.

Response by Ms. Nel

76. In response to the question regarding the financial sustainability of TTOs, Ms. Nel cited AUTM data, which consistently showed that only 16 per cent of TTOs globally either broke-even or made a profit. A 2009 article also confirmed that trend, highlighting that among the few profitable TTOs, the majority derived their success from a single high-value pharmaceutical product, which was costly to develop and commercialize. Technology transfer was not seen as a primary income generator for universities, but rather as a mechanism to make university research relevant to society. Moreover, TTOs provided a service to researchers and inventors, ensuring that their work was applied for public benefit rather than being financially driven. In that regard, many misconceptions existed about the financial expectations of technology transfer operations.

Response by Ms. Grovenor

77. While the University of Oxford TTO was profit-making, that was a recent development and remained unusual. Any surplus revenue generated by the Office was reinvested back into the University to support strategic, blue-sky research initiatives that aimed to address major global challenges. Nonetheless, the University of Oxford was in a unique position, and its financial model was not necessarily replicable in other institutions or regions.

78. While she had not been at the University when the COVID-19 vaccine was developed, Ms. Grovenor understood that the vaccine had not generated royalties during the pandemic, but that it had begun to do so during the post-pandemic period. Subtleties existed in the financial arrangements related to the licensing of the vaccine.

79. The challenge of reverse-engineerable technologies extended beyond small-molecule medicines, affecting a wide range of technologies, including software and other fields where replication was possible without direct technology transfer. However, the ability to reverse-engineer a technology should not exclude researchers from engaging in structured technology transfer processes. TTOs still played a crucial role in facilitating engagement between researchers and industry, ensuring that their innovations were effectively utilized rather than left

to chance after publication. Alternative models of collaboration, such as consulting agreements, knowledge-sharing, and research partnerships, could still ensure that expertise was transferred effectively, even in cases where patents were not the primary route to commercialization.

80. In his concluding remarks, the moderator underscored the importance of technology transfer to the broader mandate of WIPO. He encouraged participants to continue the dialogue beyond the session, and to reach out to WIPO to collaborate in finding ways to strengthen their innovation ecosystems.

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