Rocking the SAILboat: A Novel Approach to Technology Transfer Informed by A Comparative Analysis of Express Licences

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Abstract

We explore the emergence of express licenses as a means to accelerate technology transfer from publicly funded research institutions to commercial entities, focusing on tech transfer of early-stage technology portfolios to startups. While a systematic study of the impact of express licensing appears to be a gap in the literature, close examination of the many license agreements themselves reveals a wealth of information. Among other things, we note the importance of considering national and institutional context in designing effective express licenses, and identify equity as a preferable mechanism of institutional reward for tech transfer to royalties and fees. While the focus of this article is to compare between the approaches taken in the United States and Canada, the insights gleaned are applicable in any institutional tech transfer context. We distill best practices extracted from our review of express licenses and various contributions from the literature into six axioms of technology transfer that we have used to design a novel agreement, called the Simple Agreement for Innovation Licensing (SAIL), that seeks to align interests between all stakeholder groups in the technology commercialization process.

Keywords
Intellectual property; express license; tech transfer; deep tech; innovation policy

Introduction

As has been noted many times, Canada excels at producing academic research and inventions but struggles to commercialize it (Bouchard et al., 2023; Cockburn et al., 2023, 2023; Dias et al., 2020; Hinton et al., 2023; *The Jenkins Report*, 2011; Matthews & Rice, 2022). Capturing and maximizing the value of technological innovation is increasingly being recognized as key to modern economic prosperity (Ciuriak & Carbonneau, 2024; Deacon et al., 2023), while not necessarily being an explicit part of the missions of publicly funded research institutions. At the same time, it is increasingly being recognized that small businesses and *startups* may be more effective vehicles for delivering disruptive technological innovations than large established companies. This is supported both in the literature (Haltiwanger et al., 2013; Keller & Block, 2013; Lanahan, 2016; Park, Maine, et al., 2024; Swamidass, 2013; Congressional Research

Service Report, 2012; Valdivia, 2013) and in practical examples such as the American Small Business Innovation Research (SBIR) program (Ferguson & Kaundinya, 2020; Lanahan, 2016; Rask, 2019; SBA Annual Report FY 2021, 2021) as well as the Israeli Innovation Authority (IIA) (Avidor, 2011; Bar-El et al., 2019; Lopez-Claros & Mia, 2006; Nowak, 2011; Stone, 2014), both of which place heavy emphasis on startups and *spinouts*[1]. It follows that the approach taken to technology transfer by post-secondary institutions, particularly as it pertains to startups and small businesses, is a key first step toward value creation from the outputs of academic research (Boettiger & Bennett, 2006; Bubela & Caulfield, 2010; Contreras, 2021; Fraser, 2010; *From the Lab Bench to the Marketplace*, 2010; Khawand et al., 2024; Markman, Gianiodis, et al., 2005; Markman, Phan, et al., 2005; Park, Goudarzi, et al., 2024; Park, Maine, et al., 2024; Phan & Siegel, 2006). However, significant barriers exist (Kovaleski et al., 2022; Mazurkiewicz et al., 2022; Mazurkiewicz & Poteralska, 2017). Express licensing may represent a part of broader efforts toward overcoming some of these barriers.

Throughout this work, terms that first appear in italics have a definition provided in Supplementary Section S1.

A brief history of technology transfer

Even if *intellectual property* (IP) has existed since at least 600 BCE (Karthikeyan, 2021) and the first lasting patent institution was founded by the 1474 statute of the Venetian Republic (Ladas, 1975; Moore & Himma, 2022; Teich & Porter, 1996), it is not until 1925 that the first North American technology transfer office (TTO) came into existence (Merrill & Mazza, 2011; Wapner, 2016). This followed the 1915 *Declaration on Principles of Academic Freedom and Academic Tenure* (Seligman et al., 1915), which provided guiding principles to support a “right to publish” (Edwards, 2024; Eisenberg, 1988).

Since the founding of the first TTO (Merrill & Mazza, 2011) and subsequent evolutions of the TTO role (Amry et al., 2021; Baglieri et al., 2018; *Best Practices in Transforming Research into Innovation*, 2012; Borrás et al., 2024; Brantnell & Baraldi, 2022; Carlsson & Fridh, 2002; Chen et al., 2024; Colyvas, 2007; Etzkowitz & Zhou, 2021; Huggett, 2014; Kowalski, n.d.; O’Kane et al., 2015; Siegel et al., 2003, 2007), one of the most impactful moments for technology transfer (Link & Van Hasselt, 2019; Loise & Ashley, 2010; Miteu, 2024; The Role of Bayh-Dole, 2020) was inspired by United States Senators Birch Bayh and Bob Dole who co-authored the Patent and Trademark Law Amendments Act (Pub. L. 96-517), 35 U.S.C. § 200–212 (and corresponding acts) in 1980 (The “Bayh-Dole” Act, 1980) that amended the Stevenson-Wydler Technology Innovation Act of 1980 (subsequently amended by the America Competes Re-Authorization Act) (Stevenson-Wydler Technology Innovation Act, 1980; America Competes Re-Authorization Act, 2011).

Bayh-Dole was enacted in response to a perceived decline in U.S. innovation and economic competitiveness, particularly compared to Japan and Europe following the second world war (Hatch & Hyde, 1998; Smith, 2023). In close though imperfect parallel with Canada’s current difficulty translating research into economic gain, the Bayh-Dole Act sought to address low exploitation of federally funded inventions when the government retained ownership of the IP, but lacked the resources and incentives to commercialize them effectively. In addition, companies were hesitant to invest in developing and commercializing government-owned inventions due to uncertainty about ownership rights and licensing terms. The process of technology transfer from government to the private sector was complex and

[1] The authors define a spinout to mean a startup that includes founding members from the team that invented the technology being commercialized. Throughout this work, references to startups include spinouts.

inefficient, hindering commercialization efforts. As a result, a large number of publicly-funded patents sat idle with little or no benefit to the economy or public good (Miteu, 2024).

The Bayh-Dole Act aimed to solve these problems by creating incentives for commercializing federally funded research. It gave federally-funded research institutions the option to take ownership of inventions generated using public funds, but imposed conditions on the governance of the IP should the option be exercised, including a genuine attempt to commercialize, favoring small businesses as licensees (*The University and Small Business Patent Procedures Act*, 1979). This mandate, combined with heavy funding available for early-stage commercialization under the 1982 Small Business Innovation Research (SBIR) program, laid the groundwork for what would become almost five decades of highly effective translation of research outputs into technology-based economic activity (Ciuriak & Carbonneau, 2024; Loise & Ashley, 2010; Sampat, 2006; The Role of Bayh-Dole, 2020). Over the past forty-plus years, Bayh-Dole, along with other initiatives (Lanahan, 2016; Mission Innovation National Innovation Pathway of the United States, 2024; Rask, 2019), such as tax incentives led to a significant increase in patenting and tech transfer activity by U.S. universities (Shen et al., 2022), with nearly 10,000 reported *licenses* granted in 2023 alone (Miner et al., 2023). While the authors note this American model is not without its critics (Clements, 2009; de Larena, 2007; Kanarfogel, 2009), attempts have been made in many OECD countries to implement approaches similar to Bayh-Dole, with mixed results, suggesting that, while clearly an important part of the process, the success of the Act is as much a product of the context and environment in which it was enacted and implemented as it is the legislative details therein (Bengtsson, 2017; Cunningham et al., 2019; Ejermo & Toivanen, 2018; Gores & Link, 2021; Hemel & Ouellette, 2017; Mireles, 2007; Mowery & Sampar, 2005; Sampat, 2010).

Contrasted with this is the approach taken in Canada. Federal research funding through the tri-council imposes no requirements for IP management, leaving these important details to the post-secondary institution. As a result, Canadian universities take a variety of approaches to IP governance (Kenney & Patton, 2011), with policies ranging from fully *inventor*-owned, to inventor-owned with the option for institutional involvement on request, to hybrid models of ownership, to full institutional ownership similar to the American approach following Bayh-Dole (Halilem et al., 2017; Kenney & Patton, 2011), which are often embedded in collective bargaining agreements.

Without any funding-related incentives to invest in effective tech transfer practices, Canadian TTOs often need to recover costs immediately, resulting in a systematic favoring of larger businesses: Licensing to small businesses and the creation of startups for the purpose of licensing Canadian academic technologies has been trending down in recent years (Novac et al., 2020), there are exceptions at the level of individual institutions. Deficiencies in public data about Canadian tech transfer make evidence-based policy reform of the Canadian approach a significant challenge (Quantum Potential, Ottawa (ON): The Expert Panel on the Responsible Adoption of Quantum Technologies, 2023). We note that the proposed capstone agency intended to oversee the tri-council *research funding agencies* is currently being studied by the Canadian House of Commons Standing Committee on Science and Research (*Report of the Standing Committee on Science and Research*, 2024; *Impact of the Criteria for Awarding Federal Funding on Research Excellence in Canada*, 2024; *The Mission, Mandate, Role, Structure and Financing of the New Capstone Research Funding Organization*, 2024), which represents an opportunity to identify and rectify the main issues.

Express licenses

While Bayh-Dole led to a steady stream of post-secondary licensing (Mowery et al., 2001) and broad consistency of institutional IP policy (Committee on Federal Research Regulations and Reporting Requirements: A New Framework for Research Universities in the 21st Century et al., 2016), the decentralizing influence and outcomes-focus of Bayh-Dole also led to a patchwork approach to implementation at the level of deal terms (Mustafa, 2021), with few attempts to correlate deal terms to outcomes available in the literature. Meschnig and Dubiel (2023) provide a thorough review relating licensing strategies to outcomes up to 2018, but do not focus on express licenses (Meschnig & Dubiel, 2023).

It was not until thirty years after the coming into force of Bayh-Dole that the first express license was pioneered by the University of North Carolina (deSimone et al., 2010; Morriss & Meiners, 2022; Xu & Kesselheim, 2014), nearly a year before President Barack Obama's 2011 *Presidential Memorandum -- Accelerating Technology Transfer and Commercialization of Federal Research in Support of High-Growth Businesses*, calling for:

1. the reduction of "...time required to license their technologies and establish CRADAs [*sic.* Cooperative Research and Development Agreements] to the maximum practicable extent",
2. the "streamlining of licensing procedures", and
3. the reduction of "SBIR award timeline and licensing process for small businesses." (Obama, 2011), on which United States federal agencies had already initiated pilot programs a year earlier.

In 2012, the United States Department of Defense released its *Strategy and Action for accelerating technology transfer (T2) and commercialization of federal research* (Strategy & Action Plan for Accelerating Technology Transfer (T2) and Commercialization of Federal Research in Support of High Growth Businesses, 2012).

For the purposes of this article, we define an *express license* as any license template that contains standardized (or streamlined) deal terms that aim to minimize required negotiation and subsequent legal drafting, and to allow a definitive agreement to be reached quickly and at lower cost. From this definition emerges the first axiom of tech transfer to support express licenses: *License templates should be understandable and usable by someone without legal training (axiom of simplicity and clarity).*

Among numerous examples of license frameworks created with the intention of streamlining tech transfer, several of which are linked in Supplementary Section S2, two achieved widespread adoption in the USA and have had an influence on Canadian tech transfer: BOLT (Ku et al., 2024) and EASE. These represent two ends of a spectrum that ranges from a simple non-negotiable term sheet through to a fully negotiable licence that standardizes only the legal boilerplate. EASE is a set of five non-negotiable license templates, the choice of which is primarily dictated by whether or not the technology to be licensed is a software product. BOLT is a fully negotiable starting point for license development that can be customized to adapt it to almost any institutional context, to work for most institutions, most of the time. Language taken from the BOLT template is evident in many Canadian licensing agreements, although it appears that only a minority of Canadian institutions use express licences. This is problematic, as licensing speed (or deal velocity) has been identified as a key predictor of value arising from licensed IP (Markman, Gianiodis, et al., 2005). Internationally, there are other types of express licenses (Hashim et al., 2020), some of which are listed in Supplementary Section S2.

A review of license terms available via the AUTM TransACT database[2] reveals an enormous variety of ways in which post-secondary institutions seek to capture value from their tech transfer activities, including *equity* (with or without *anti-dilution protection* and/or *pro-rata rights*); *royalties* and *sublicense* royalties (with or without *milestone*-based rate adjustments and/or *annual minima*); technical and/or financial milestone payments; ongoing or *upfront fees*; buyout fees, percentages of M&A deal value; and more.

In this article, we compare and contrast the approaches taken by express licenses to securing institutional benefit and any restrictions imposed on use of the licensed IP (e.g. *exclusivity*, ability to sublicense, *claw-back* provisions, etc.). We also examine the incentives created for various stakeholder groups. We provide a detailed analysis of a representative set of United States express licenses, and use the knowledge gained to suggest a novel licensing approach which we call the Simple Agreement for Innovation Licensing (SAIL). SAIL seeks to synthesize best practices into a technology-agnostic license that can be used in any institutional context and recognizes key contextual differences between the United States and Canada that may have frustrated adoption of United States express licenses in Canada, though we note that some institutions are beginning to adopt versions of express licenses.

Methodology

We identified express licenses and relevant literature through a combination of literature searches in HeinOnline, PubMed, ScienceDirect, Sage, and a review of institutional websites, searching for license templates, published work assessing express license use, and work assessing the effect of license deal terms on tech transfer outcomes. Express license analysis appears to be rare in the extant literature, as these databases revealed only a small number of relevant references. We also conducted informal interviews with a variety of post-secondary institutions in the United States and Canada, obtaining copies of their license templates wherever possible.

Having assembled a representative sample of express licenses, we identified common elements, focusing on the means by which post-secondary institutions seek to benefit from tech transfer activities and the restrictions placed on licensees on their use of the licensed IP. Taking into account relevant data in the literature and following consultation with various stakeholders involved in the tech transfer process, we developed some axioms of tech transfer to serve as guiding principles for the design of SAIL.

We sourced licensing data from AUTM's TransACT database, which encodes details of licenses granted by post-secondary institutions. Figure 1 shows a summary of TransACT licensing statistics by year, *licensee* size, and place of origin, showing a consistently higher rate of startup formation arising from institutional tech transfer in the US.

Between 2002 and 2024, some details of a total of 2,315 licenses are accessible in this database across 213 institutions representing a minority of total licensing deals, of which almost 10,000 were reported in 2023 alone (Miner et al., 2023). Of these, 896 licensing deals resulted in the creation of new startups, and 463 involved university faculty, with approximately half of each cohort based in the United States. It is clear from a comparison to recent AUTM reports that only a small subset of reported licenses are fully detailed in the database, since the AUTM 2020 report (Novac et al., 2020) lists more Canadian licenses than are shown in the ex-US category of TransACT data.

[2] The TransACT database is freely available to universities that contribute data: https://autm.net/transact

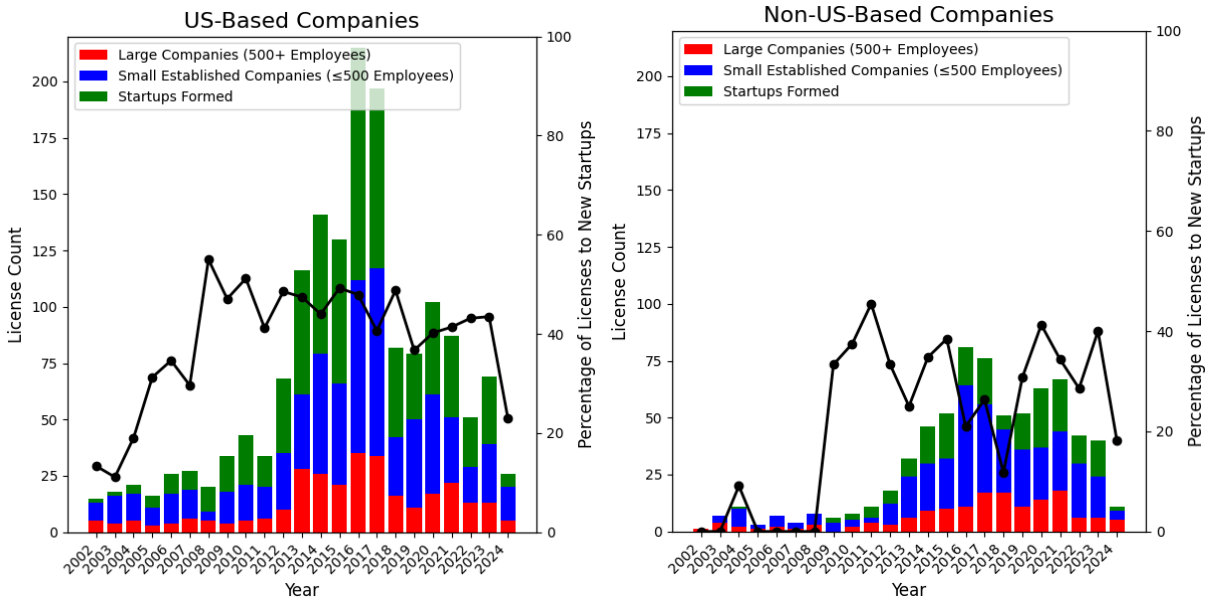

Figure 1: Breakdown of entity size by year for AUTM TransACT data for a) US-based companies and b) non-US companies (majority Canada), broken down by licensee size. On the right axis on each plot, we show the percentage of licenses to newly formed startups in each case (black circles). In aggregate, 43% of US licenses are to newly formed startups, compared to just 29% outside the US.

Care should be taken in interpreting or drawing conclusions from TransACT data. While AUTM is international, the only location-specific information available in the TransACT database is whether or not the licensee is based in the United States, though the distribution of values present suggests a North American due to relatively low equity stakes (Ulrichsen et al., 2022). The data is not sufficient to permit the assessment of the extent to which it is dominated by any one institution.

It is also clear from the number of deal terms or transactions that only a minority of licensing deals have been uploaded, indicating that significant biases are likely present in the dataset. AUTM data provides a snapshot of the moment of licensing, but no identifying information enabling correlation of licensing deals to long-term outcomes. Finally, Bayh-Dole reporting requirements (Committee on Federal Research Regulations and Reporting Requirements: A New Framework for Research Universities in the 21st Century et al., 2016; NIST, 2024) do not discern or obligate the parties to a license to identify whether an express licence was used, though the authors note recent calls for changes to reporting requirements (GAO-21-52, 2020).

We believe these deficiencies are a direct result of a lack of reporting requirements in publicly-funded research. We suggest that correction of this by Canadian granting agencies in further policy development related to tech transfer in any context.

Findings

Equity vs royalties vs fees

There appears to be a consensus in the literature that equity is the preferred mechanism to achieve institutional benefit, not royalties or fees, in licensing to startups. Savva *et al.* argue that fees or cash payments create ”value-destroying distortions” and show blended equity-royalty licenses outperform fee-royalty licenses (Savva & Taneri, 2015). They are supported by work demonstrating that licensing for cash is poorly correlated with new venture creation, while the opposite is true for equity-based licensing (Markman, Phan, et al., 2005). Equity is associated with higher long-term value for universities (Bray & Lee, 2000), but to the best of our knowledge no recent study has attempted to study this systematically. Previous work on the subject clearly identifies a preference for equity in licenses to small businesses, and fees and/or royalties in licenses to large companies for which equity is not usually an option (Aksoy & Beaudry, 2021), which is reflected in Table 1. This is unsurprising, given that an established company is unlikely to issue equity in a licensing deal. Longer licensing times have been shown to be correlated with higher royalty rates on licenses (McCarthy & Ruckman, 2017), providing additional support for the need for express licenses.

With the possible exception of large American institutions (that, not coincidentally, tend to favor equity-focused express licenses as can be seen in the various express licences in Supplementary Section S2), most TTOs are under-resourced relative to their potential for value generation (Katzman & Azziz, 2021; Potter, 2008). This creates a problematic incentive in light of both the fact, noted previously, that small businesses are better vehicles for disruptive innovation and that licensing in exchange for equity is associated with better small business outcomes. Large, established companies are able to provide necessary cash flow to TTOs via royalties and fees, whereas equity-based licenses may require many years before a liquidity event. Only institutions that have the discretionary funding to bridge the time lag between licensing and a liquidity event relating to the equity are able to address this.

AUTM data tells the story clearly (Aksoy & Beaudry, 2021): as can be seen in Table 1; among licenses reported in the TransACT database, there appears to be a strong preference for royalty- and fee-bearing licenses over those that involve only equity outside of the United States. Among licenses to new companies formed specifically to commercialize the technology, United States institutions are almost twice as likely (60% of licenses) to take equity as non-United States institutions (35% of licenses), and very few licenses to newly formed companies took only equity as compensation.

This difference in equity preference also points to a fundamental contextual difference between the United States early-stage commercialization ecosystem and Canada’s. Venture capital and entrepreneurs ready to invest time or money into new ventures are relatively abundant in the US, but this is not true in Canada. We suggest that this is one important factor in a higher failure rate among startups in Canada and this too incentivizes research institutions to prefer cash flow over equity, which gives rise to a negative feedback loop.

One of the arguments supporting fee- and royalty-based licensing is that most institutions require a mechanism that enables sharing the proceeds of licensing activity with inventors (*Incentives in Technology Transfer*, 2024), at times referred to as ‘*distribution of licensing revenues*’. This is a responsibility under Bayh-Dole in the US, and commonly adopted elsewhere, in Canada often through institutional IP policies and collective bargaining agreements where applicable. It should be noted that

while cash flow may be preferred, it is not explicitly mandated, and mandates do not limit revenue sharing to fees and royalties (Bayh-Dole identifies royalties, but allows for other income types), allowing for sharing of the proceeds of equity liquidation. WIPO provides a comprehensive overview of possible approaches (*Incentives in Technology Transfer*, 2024).

Table 1: Percentage of licenses reported in the TransACT database between 2002 and 2024 that take equity, royalties, and flat fees, by licensee size and location. Since some licenses may involve more than one means of institutional benefit, row percentages may sum to more than 100%.

	Equity		**Royalties**		**Fees**	
	US	**Ex-US**	**US**	**Ex-US**	**US**	**Ex-US**
Large Company	0.3%	0.0%	51.2%	39.6%	85.3%	86.3%
Existing SME	10.6%	2.7%	82.2%	76.9%	73.3%	69.9%
New Startup	60.7%	35.2%	96.0%	94.0%	45.5%	51.8%

While the literature is clear about the value of involving inventors in commercialization of nascent IP portfolios (Park, Goudarzi, et al., 2024; Park, Maine, et al., 2024), the conclusions of research into the impact of revenue sharing mechanisms on inventor motivation to participate are inconsistent. While some authors find that it is an important factor (Halilem et al., 2017; Jensen & Thursby, 2001), more recent research concludes that revenue sharing is not correlated to the behavior of professors with respect to commercialization activity (Ouellette & Tutt, 2020), although we note the possibility of sampling biases or more complex mediating factors, for example as postulated by Qiu *et al.* (Qiu et al., 2023).

In Canada, the numbers suggest that revenue sharing by royalties alone is unlikely to be an important consideration for inventors even if revenue sharing in general is important. According to the 2023 AUTM licensing report for Canada, the total value of all the royalty revenue collected by Canadian TTOs amounted to just $170,000 per $10M spent on research, and average revenues exceeded median revenues by a factor of four (Novac & Miner, 2023), indicating a heavily skewed distribution in which most of the licensing revenue share to inventors contributed only marginally to total compensation in the majority of cases. However, there may exist alternative revenue sharing models in favour of inventors.

We draw on this to propose one of the tech transfer axioms proposed by this work. If revenue sharing by royalties alone is unimportant, and taking fees creates value-destroying incentives, then it follows that fees and royalties should be avoided and that to the extent reasonably possible *every dollar available to a startup should be used to build value in the licensed IP (axiom of value creation)*. In other words, equity should be the preferred mechanism for institutional benefit from tech transfer, so that revenue sharing responsibilities are met in the long run while avoiding the distortions that may be created by cash flow based considerations.

Why are equity-focused licenses not used more often in Canada?

This begs a question, however: since many equity-focused express licenses already exist, why have they not been more frequently used to overcome current challenges in the Canadian tech transfer ecosystem? In our view, this is primarily due to context, with two key factors at play.

First, Canadian TTOs operate with smaller budgets than their American counterparts, and are less likely to accept equity (as reflected in Table 1). This suggests a need for countervailing interventions via public funding to allow TTO cost recovery without diverting resources away from licensees. In Canada, various initiatives have recently emerged focused on subsidizing the cost of IP strategy, filing, and management, which could benefit universities by enabling eligible startups to pay more upfront costs toward TTO cost recovery through license fees, including the Innovation Asset Collective (IAC) and ElevateIP funding programs and their various provincial counterparts, as applicable. These are positive steps toward addressing this challenge. We suggest that licensing deal terms and long-term licensee performance metrics should be required to be reported to granting agencies that fund production and licensing of IP as an important input to ongoing impact assessment.

Second, the Canadian venture capital funding landscape for early-stage technology startups is small in comparison with that of the United States (Canada's Venture Capital Landscape, 2024; The State of Corporate Venture Capital in Canada, 2024). Therefore, Canadian startups usually raise smaller rounds at lower valuations than their American counterparts (The Current State of Seed Investing in Canada, 2024), reducing the perceived value of equity and resulting in relatively larger amounts of equity being taken by the institution. Larger equity stakes taken by institutions in licenses outside the United States are reflected in Figure 2. This second challenge requires a more nuanced approach to equity consideration and value capture. We propose a solution in the following section and in SAIL.

Valuing early-stage IP portfolios

Valuation of institutional IP is a complex task (Nicol, 2008). One of the challenges associated with the provision of equity for tech transfer is that it generally makes it harder to value IP pre-commercialization, prior to revenue (Durand & Mulcair, 2023), making any negotiation difficult for all parties. Caviggiolo *et al.,* supported by others (Agrawal, 2006; Elfenbein, 2007), also note that "Technology is highly idiosyncratic (i.e., it may only be of value to a few adopters) and it displays its value only when it is used, due to the tacit and non-codified nature of the knowledge base that underlies it" (Caviggioli et al., 2020).

A number of authors provide reviews of common practices for valuation of patent portfolios by TTOs (Granot-Mayer et al., 2019; Holmes Jr., 2009; Rocha & Romero, 2012), which generally involve searching for comparable technologies or data from using pre-existing industries in the sector on cash flow-based considerations. More recently, Koc and Yildirim suggest a multi-factor analysis is needed to assign value to early-stage IP portfolios (Koc & Yildirim, 2023). For academic IP with a low technology readiness level (TRL) (Olechowski et al., 2020), this is often not possible, or would at best be unlikely to result in a meaningful conclusion, since a market may not yet exist for the technology. From this challenge arises another axiom: *Valuation of an IP portfolio should be deferred until the market has been established (axiom of valuation).*

Among many tensions and challenges that exist in tech transfer (Fink et al., 2023; Link et al., 2015), following on from the valuation difficulty is an issue identified in negotiations between institutional licensors and licensees that has been the subject of debate the world over: to what degree should an institution benefit from commercialization activity? Most express licenses answer this question by simply specifying a fixed amount of equity ownership rather than trying to assign an explicit value to an IP portfolio. This is reflected in Figure 2, which shows a modal value at 5% equity taken when licensing to new startups, likely due to the influence of many express licenses, for which 5% equity is a common preset. However, outliers exist, with a handful of licensors taking double-digit percentage ownership with a bias toward larger institutional shares outside of the United States. For example, median equity stakes

for UK universities is 33% (Ulrichsen et al., 2022), too high to even appear in Figure 2, and largely unrepresented in AUTM data.

Institutional benefit from tech transfer

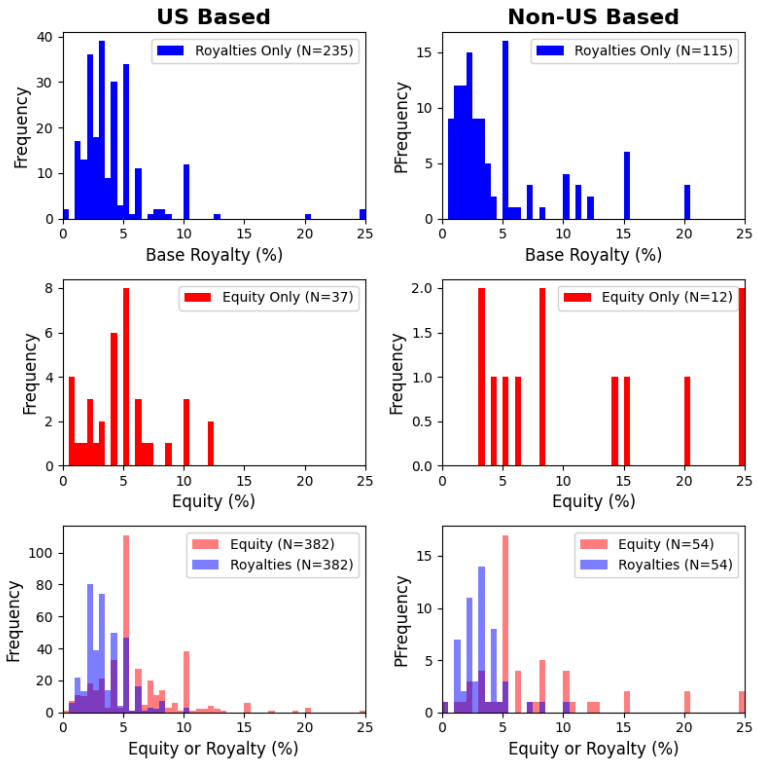

Figure 2: Top row: Frequency of royalty percentages taken among licenses that resulted in formation of a startup that took royalties but not equity. Middle row: Frequency of equity taken among licenses that resulted in formation of a startup that took equity but not royalties. Bottom row: Frequency of both royalties and equity taken among licenses that resulted in formation of a startup that took both royalties and equity. Licenses that provided for neither royalties nor equity, those for which either exceed 25%, or those where royalties were based on something other than percentage of net sales, are ignored. In cases where royalties were tiered or variable, only the tier in force when the licensee began operations was considered. 61 of the 896 startup-forming licenses were excluded by these criteria.

Equity stakes in startups spun out of United Kingdom universities is the subject of ongoing debate, but a direct comparison to the United States is difficult. As will be discussed later, United States licenses start with smaller equity stakes, but often include anti-dilution protection, royalties, and fees, whereas United Kingdom licenses often take only fully dilutable equity and are often immediately diluted to ~20%. The median equity stake appears to be trending downward, as well (Ulrichsen et al., 2022). As such, the practical implications of the difference in absolute number are smaller than a direct numerical comparison would suggest, highlighting the importance of considering the entire licensing deal rather than any particular term in isolation when making a comparison. The USIT guide recommends that United Kingdom universities take no more than 25% equity in life sciences and 10% in software startups (University Spin-out Investment Terms, 2023).

Institutional costs arising from commercialization

While the direct costs of research in Canada are generally provided by taxpayer-funded grants and/or via private sector partnerships, the indirect costs of research, for example providing the infrastructure required for research the ancillary services on which a lab depends, are usually paid for out of institutional resources arising from overheads taken on research contracts. These indirect costs are generally not explicitly taken into account in assessments of the contribution of the research institution to the commercialization process.

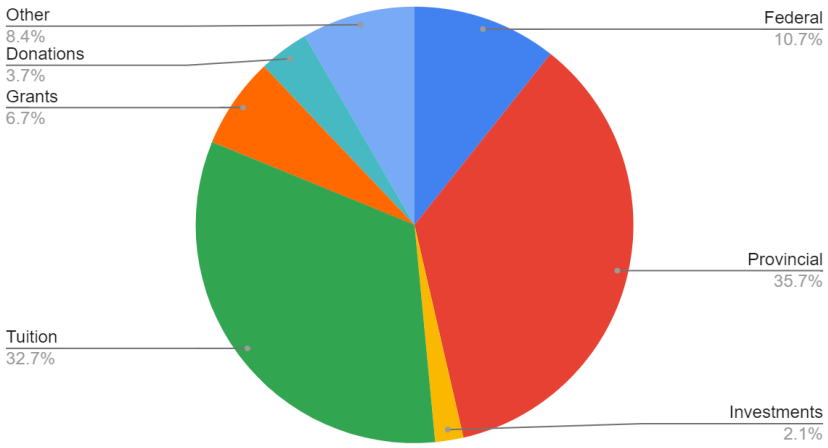

Figure 3: budget breakdown of Canadian post-secondary institutions for 2021/22 fiscal year(*Statistics Canada Survey 3121*, 2023).

A breakdown of the 2021/22 budgets of Canadian universities shown in Figure 3 shows that direct federal and provincial funding is just under half of most university budgets, with the single largest overall contribution coming from tuition fees (*Statistics Canada Survey 3121*, 2023). In contrast, as much as a third of the budget of United States universities may come from investment (Korhonen, 2024), indicating that American universities often enjoy more discretionary resources, both in absolute terms and as a percentage of total budgets, than those in Canada.

According to Caviggioli *et al.*: “Universities are expected to pursue goals that are different from those of companies. The main goal of a university is to achieve a quick and broad dissemination of its generated technology for the good of society” (Caviggioli et al., 2020). If so, while patenting is an important part of that goal, there is little incentive for “strategic” patenting or maintaining patents in the long term without making an attempt to commercialize: the goal of patenting in a university context is to effect transfer of the technology. As such, any patent with value is likely to appear on the IP market (Caviggioli et al., 2020; Elfenbein, 2007; Merrill & Mazza, 2011).

In the United States, the Bayh-Dole Act appears to ensure that a commercialization attempt is included in the mandate for universities that choose to take ownership of IP arising from publicly funded research, but no equivalent requirement to attempt commercialization appears to exist in Canada. Because discretionary resource allocation is zero-sum, anything spent by Canadian institutions in support of tech transfer may come at the cost of activities better aligned with their mandate, in some cases making it difficult for universities to invest directly in commercialization in spite of increasing pressure to do so

(Amry et al., 2021). Nevertheless, a recent review of commercialization activity shows significant global acceleration in startup creation (Romero-Sánchez et al., 2024).

Converting institutional cost to long-term value

This suggests to us a relatively simple way to assess the cost of the commercialization process to institutions: any expenditure by the institution above and beyond that which would have been spent in the normal course of supporting research activities by the relevant funding source (or covered by public funding) should be considered a cost and an investment specific to the commercialization process, and should therefore be captured in the equity awarded. This gives rise to another axiom to guide license development: *The equity taken in consideration of tech transfer activities should be commensurate to the cost of commercialization (axiom of incentivization).* It could be beneficial for research institutions, including TTOs, to capture costs associated with their support of founders and startups in commercializing their technology in order to have their value contribution fairly reflected on the startup cap table. These contributions could include but are not limited to patenting and subsequently managing the resulting IP portfolio, access to critical lab space and equipment, and legal or other professional services provided in support of licensees.

Without being able to assign a concrete value to a startup, however, it is challenging to convert the cost of the commercialization process into a specific equity percentage, a problem for which early-stage venture capital has a solution. When the amount of cash or other consideration demanded for tech transfer is clear, but the value to be assigned to the licensee is not, convertible debt may be appropriate to ensure adequate benefit to the institution. This model has been widely adopted globally since Y Combinator released its SAFE agreement in 2013 (Ballesteros-Ruiz & Cardenas-del Castillo, 2019; Chaplinsky & Becker, 2020; Coyle & Green, 2018; *Entrepreneur's Toolkit*, 2024; Kim et al., 2024; Lasicki, 2021; Monroe-Sheridan, 2023; Perry et al., 2022), as we will discuss both later and in Supplementary Section S3 since this idea of convertible debt and value capture is central to SAIL.

Assignment vs (exclusive) licensing

In tech transfer in the United States, outright *assignment* of IP to commercial entities is rare. Caviggioli *et al* report that of the 37% of American post-secondary patents monetized, licenses outnumber outright transfers of ownership by a factor of 20 (29.7% versus 1.3% of patents awarded to American post-secondary institutions, respectively). This is due in large part to the fact that American institutions can only sell a patent outright if it was developed without federal funding or they have received explicit permission from the funding agency to do so (Caviggioli et al., 2020). Moreover, Bayh-Dole dictates that any license that is exclusive (Shen et al., 2022) must also require that products be substantially manufactured in the United States (Smith, 2023). However, to the best of our knowledge, no such restriction is placed on Canadian tech transfer, and assignment of ownership of the IP outputs of sponsored research to industry sponsors is more common, occurring approximately a quarter of the time, at least as was the case according to the last survey by Statistics Canada in 2008 (*Survey of Intellectual Property Commercialization in the Higher Education Sector*, 2008).

Identifying control over a patent is not a simple task. While assignments are public, licensing is generally not, and indirect methods must be used to assess whether or not a patent has been licensed (Drivas et al., 2016; Marco et al., 2017). This further reinforces the need for improved data collection with respect to Canadian tech transfer (Quantum Potential, Ottawa (ON): The Expert Panel on the Responsible Adoption of Quantum Technologies, 2023).

Selling versus licensing may also entail very different risk profiles. Licensing usually generated an ongoing benefit or value accruing over time and concomitant uncertainty, while selling generally involves an immediate payment. Institutions may therefore prefer to license patents that are perceived to have a low technical risk, and to sell those that are perceived to have a high technical risk (Jeong et al., 2013; Pries & Guild, 2011). Pries & Guild note that "greater commercial uncertainty was associated with a greater likelihood that the technology was commercialized by creation of a new firm or transfer of the rights to the technology to an existing firm" (Pries & Guild, 2011), though the characteristics of the institution (Wu et al., 2015), the nature of the technology in question, the size of the licensee, and the availability of prospective licensees (Padilla Bejarano et al., 2023) all play a role in the decision. Licensing may also be a means of risk-sharing through deferred payments and, if non-exclusive, may allow for the possibility of further value capture through additional licensees (Caviggioli et al., 2020). It also avoids the possibility of shelving the technology for strategic reasons (Lu et al., 2023, 2024), or acquisition by patent trolls (Firpo & Mireles, 2018; Kramer, 2021; Lemley, 2008).

Consistent with the above, low-TRL inventions tend to be licensed exclusively or sold outright, while more mature technologies are comparatively more likely to be licensed on a non-exclusive basis (Caviggioli et al., 2020; Jeong et al., 2013; Öcalan Özel & Pénin, 2016). Finally, Pénin (Pénin, 2010) and others referred to by Pénin identify life sciences and pharmaceuticals as fields in which exclusivity is required for development of new products, while noting that this is not necessarily true in other areas.

This suggests that assignment (or at least exclusive licensing) is most appropriate when transferring IP with high technical uncertainty, which is almost always the case with technologies being licensed from research institutions. Express licenses we examined usually provide field-limited exclusivity, with the institution reserving the right to license to others in non-overlapping sectors. This provides a significant opportunity for Canadian deep tech in particular, given that Canadian institutions are not prevented from assigning or selling their IP to commercial entities and academic IP is often associated with a high degree of technical uncertainty (Park, Goudarzi, et al., 2024; Park, Maine, et al., 2024; Romasanta et al., 2021).

On the other hand, Canadian grant funding typically comes with a requirement that universities ensure "benefit to Canada" arising from publicly funded research. Since mapping a path to market for embryonic technologies is difficult, this requirement may make immediate assignment and exclusive licensing less attractive to universities, and suggests a need for discernment and a degree of caution with respect to unproven startups.

Together, this gives rise to two further axioms. The first is that *ownership of the IP should transfer from the academic institution to the licensee if there is sufficient evidence to conclude that the licensee is an economically viable entity (axiom of viability)*. The second is that *a license should not unduly limit innovation or the use of publicly-funded research outputs to realize economic benefit (axiom of benefit).* The latter axiom is supported directly by the best practices presented in AUTM (AUTM, 2007) and widely ratified by North American post-secondary institutions.

Technology-type dependent deal terms

A common feature of express licenses we reviewed is deal terms vary depending on the technology type, most commonly delineating between software and non-software IP, with a strong preference for pure equity over royalties when licensing software. Based on feedback from TTOs and early stage *investors*, this is due to the difficulty of deciding the relative contribution of a particular piece of software to an overall

end product, and the pace of evolution of software code making a calculation of royalties difficult and prone to ambiguity. Licenses are fully pre-negotiated templates that tend to follow this breakdown of technologies into “software” and “other”, with software licences majoring on equity rather than royalties. Yale University’s template follows this breakdown, while the University of Colorado’s EASE approach also does so but goes further, with two equity-only subtypes for software depending on whether or not the software is subject to a patent, while three subtypes for bioscience, physical Science, and engineering allow for a mix of equity and royalties, at the licensee’s option.

Aside from the licences themselves, the literature rarely addresses licensing practices broken down by technology type. While established companies, for which licensing in return for equity would not be an option, are recognized as being better vehicles for bringing new drugs to market (Arora et al., 2009), we were unable to identify extant literature suggesting that equity is problematic for any technology type. Most available license templates suggest that the amount of equity should be a single-digit percentage; this is supported by a strong modal value of 5% equity across North American express licenses (University of Waterloo and University of Toronto in Canada often take a 5% equity stake, as do others as indicated by data available in the TransACT database, shown in Figure 2).

While royalties or other cash considerations have been associated with more value for the institution in the long run than a lump-sum payment for the sale of a patent (Caviggioli et al., 2020), so far as we are aware, no comparison has been made between long-term value accruing from institutional equity stakes in companies and royalties received. However, since licensing revenues for Canadian universities amounted to just 1.7% of the costs of their research in 2023 (Novac & Miner, 2023), the long-term value of a small amount of equity in a successful technology company could easily exceed the institutional licensing revenue of most institutions.

So, equity-only (or convertible debt that becomes equity-only) licenses appear to be generally more appropriate longer-term, regardless of the technology type, and, therefore, the proposed SAIL framework is technology-agnostic. Nevertheless, the use of SAIL or indeed any express licensing framework in Canada cannot exclude the possibility of the need for TTO cost recovery. We suggest that a systematic study of the long-term value of institutional equity versus royalties should be prioritized as an input to the Canadian debate on enhancing the productivity of publicly funded research.

Express license templates

From our research there appears to be a very large number of non-identical express licenses in active use, with many United States based institutions using a template of some sort, with various degrees of standardization between deals. Supplementary Section S2 lists a non-exhaustive but representative sample of express licenses we found.

The BOLT license agreement, while not strictly speaking an express license given its customizability, is the result of a multi-institution, investor, and law firm in an effort to create a representative term sheet that an investor and institution might use to begin to discuss the launch of a startup. The objective was to create a *reasonable* approach, with legal boilerplate that *most* parties could use in *most* situations, so as to accelerate the tech transfer process, recognizing the problems caused by long negotiation times. BOLT is an editable template that contains (for most cases, acceptable) legal boilerplate covering most aspects of tech transfer that can be mixed and matched as needed.

While some sections of BOLT are marked as being editable, footnotes throughout make clear that the entire agreement is intended to be customizable, allowing parties to select which elements to use and vary them as appropriate. While standardization of the legal language is a valuable addition to the tech transfer toolbox, going from the raw BOLT template to a specific transaction (or definitive agreement) still requires negotiation of every possible tech transfer lever. As such, BOLT is perhaps better thought of as a starting point from which license can be developed, rather than a template that is intended to be used verbatim, and it is used as such in practice. Language from the BOLT is reused in many institutional licensing templates, and BOLT has had an undeniable impact on tech transfer in North America, with its language appearing in licenses even at institutions that do not use express licenses per se.

In contrast to BOLT, EASE is a simple set of licenses that are intended to be non-negotiable apart from the choice of template. Under the EASE license (or framework), the first decision is dictated by the technology type: one category is for bioscience, physical science, engineering, while the other is for software. Within the former category, licensees can then choose between an all-equity, royalty-free license, an all-royalty, equity-free license, or a mix of the two. Within the software category, both licenses are equity-only, with the percentage of equity dictated by whether or not the software is protected by a patent. As such, only one choice is actually necessary for agreement in the former case, while everything is entirely prescribed in the latter case.

Other express license templates tend to fall somewhere between these two extremes in terms of complexity. The University of Akron Express License (Horton, 2023), for example, allows for negotiation of the amounts of equity, royalties (with annual minimums), and takes 50% of sublicense fees, while the North Carolina Express license is largely non-negotiable and prescribes 5% equity or 1% of the value of any liquidity event and a tiered royalty schedule beginning at 2%, with annual minimums. The University of Saskatchewan takes no equity, instead taking a 1% royalty on both licensee and sublicensee sales, 15% of any non-sales income derived from sublicenses, and full cost recovery, with the option for the university to terminate if the licensee fails to commercialize the technology for a period of 1 year. Table 2 presents a comparison of the key terms of a few selected licence templates.

While it is not possible to tell which licenses correspond to which express license template, if any, was used in the data available from AUTM, we can conclude that most of the licenses reported to AUTM that resulted in formation of a new startup favor a similar range of royalties (centered around 2.5%) and/or equity (centered around 5%) in the United States.

Table 2: a comparison of a selection of express licenses commonly used in North American tech transfer. Additional express license templates are available in Supplementary Section S2.		**USask Fast License**	**EASE**					**University of North Carolina Express License**	**BOLT**	**SAIL**
			Equity	Hybrid	Royalty	Patent	Copyright			Version 2
Licensor Consideration	Cost Recovery	Full	Pro-rata by number of licensees					Over months 6-12	As an upfront fee	Can be added to convertible debt
	Equity	None	10%	3%	0%	5%	2%	5% in lieu of liquidation fee	Negotiable amount	Variable, upon conversion of the debt
	Royalties	1%	0/0.5% below/above $20M sales	2%	3%	0%	0%	2% clinical products, 3% other products, 5% services	Negotiable amount, may vary over time	None
	Upfront Fees	Cost Recovery	None						Optional	Optional, can be added to convertible debt
	Anti-dilution (total $ raised)	N/A	$5M	$3M	$0	$2M	$1M	$2M	Negotiable amount	None
	Pro-rata rights	N/A	Can purchase 10% of issued securities while anti-dilution protection in effect					Can maintain ownership share	Can maintain ownership share	None
	Sublicense Royalties	1% sales, 15% non-sales	0%	15%	20%	0%	0%	15% before / 10% after Phase I clinical trial	Negotiable amount, may vary over time	Negotiable percentage of sublicensee sales
	Fees	None	$15,000 annually			None		1% of liquidation, increasing annual minimum royalties	Negotiable minimum annual royalties	Optional buyout fee
Restrictions	Path to Transfer of IP Ownership	None	None			None		None	None	Realization of a pre-defined trigger
	Limitations		Bio/Physical Sci & Eng.			Software		Licensee must have UNC-affiliated founder	Life Science	Licensee must be a startup
	Exclusivity	Exclusive	Field-exclusive					Field-exclusive	Field-exclusive	Exclusive
	Sub-licensing	Allowed	Implied allowed by existence of sublicense royalty pass-through rate					Allowed		Mandatory
	Access to Improvements	Licensee may assign improvements to university	Not addressed					Not addressed	Automatically licensed	Option to add narrowly defined improvements
	Dispute Resolution	Court	Not explicit in term sheet					Court		Binding arbitration
	Customizability	Non-negotiable	Choice between three non-negotiable options			Non-negotiable		Non-negotiable	Fully customizable	Customize fees, sublicense royalties, and components of convertible debt

Axioms of tech transfer

Understanding that the adage “one size fits all” cannot apply in technology transfer (Baglieri et al., 2018), we (and indeed, the authors of any express license template) firmly believe that one size can fit most, and that there is much room for improvement in the licensing process to facilitate the commercialization of IP arising from publicly funded research.

From the foregoing discussion, we have selected six axioms for tech transfer to guide express license design. Many of these are drawn from best practices already published, in particular by the AUTM (AUTM, 2007). Interestingly, however,while these best practices are widely ratified and accepted by institutions across North America, they have had little to no impact on actual license terms used by those institutions, with many license authors outright ignoring them (Contreras, 2021). We created SAIL to offer an alternative licensing template that is specifically intended to align incentives among all stakeholders and respect the axioms noted above for licensing to startups.

In the design of SAIL, where conflicting priorities arise, they are resolved through consideration of these axioms, weighted from most to least important as presented below.

1. A license should not unduly limit innovation or the use of publicly-funded research outputs from to realize economic benefit (*axiom of benefit*);

2. Ownership of the IP should transfer from the academic institution to the licensee if there is sufficient evidence to conclude that the licensee is an economically viable entity *(axiom of ownership)*;

3. Valuation of an IP portfolio should be deferred until the market has been established *(axiom of valuation)*;

4. Every dollar available to a startup should be used to build value in the IP portfolio (*axiom of value creation*);

5. The equity taken in consideration of tech transfer activities should be commensurate to the cost of commercialization (*axiom of incentivization*); and

6. License templates should be understandable and usable by someone without legal training (*axiom of simplicity and clarity*).

Simple agreement for innovation licensing (SAIL)

SAIL, detailed in full in Supplementary Section S3, is based on the idea of a fully pre-negotiated approach to tech transfer that, unique among express licenses we reviewed, relies on convertible debt as the primary institutional benefit mechanism. The dollar amount of convertible debt will vary but follows a clearly defined formula comprising the sum of all costs incurred by the research institution before the effective date in building and protecting the IP portfolio (*past costs)*, any upfront fees (*present costs*), and the dollar value of any ongoing support provided by the research institution between the effective date and the point in time at which the convertible debt converts to equity (*future costs).* Ongoing support might include payments by the research institution to support the patent portfolio, or deferred rent for startups incubated in institutional labs. The parties can agree that the Licensee pay some of these costs

as a cash fee instead of adding them to the convertible debt, providing flexibility on the amount of convertible debt to be accrued by the startup and the need for cost recovery by the TTO. While the licensee will be contractually responsible for IP portfolio costs, including new patent filings, some or all of those costs can be absorbed by the *licensor* into the future costs component of the convertible debt. Given the use of convertible debt, typically limited to early-stage commercial operations, SAIL is appropriate for licensing to a startup, but not for licensing to established companies. Because it uses only (future) equity, SAIL is designed to be technology-agnostic and suitable for licensing of any IP asset.

This approach ensures compliance with the axioms of valuation (valuation is deferred until the debt converts to equity), value creation (no fees are taken except as mutually agreed), and incentivization (convertible debt equal to the cost of commercialization converts to equity, which ensures no upper limit on institutional reward for providing that support). The parties may consider additional components of the variable convertible debt to the extent they are compliant with the axiom of incentivization, which is to say they represent costs to the institution that would not have been incurred in the normal course of research giving rise to the licensed IP.

The specific form of the convertible debt is not prescribed by SAIL, but should be compatible with the use of the SAFE, the KISS, or any other agreement through which an amount of debt converts to equity on realization of a pre-defined trigger (or triggering event, such as a liquidity event) (Coyle & Green, 2018). Based on conversations with investors and early stage founders, we see no issue with use of agreements that provide for pro-rata rights, but discourage agreements that include anti-dilution protection. SAIL is royalty free, and the only associated fees are those that are not deferred to the convertible debt component, providing a direct incentive to institutions to absorb costs wherever possible to increase their eventual equity stake.

The amount of convertible debt, while initially equal in dollar amount to the cost to the research institution of supporting the startup, does not limit the potential upside of the institution in any way. Convertible debt not repaid converts to equity upon realization of a clearly defined trigger event (usually a priced investment round or a specific date) (*Entrepreneur's Toolkit*, 2024). Subsequent value growth of the licensee will then multiply the institutional investment as it would that of any other investor, satisfying the axiom of value creation.

This approach has a secondary benefit, especially since funding environments where early-stage investment is scarce. While universities have an incentive to see value growth in equity, SAIL creates an additional level of institutional incentive, rewarding the research institution (or their designated Investor) with convertible debt only in proportion to its value added to the commercialization effort, for example through deferred rent on lab space, creating structural incentives for universities to continue providing valuable support in the early stages. This should create a win-win-win-win scenario for the four key stakeholders to SAIL.

Assuming the success of the venture,

1. Institutions can multiply the long-term value of a short-term investment of resources they already have (e.g. lab space) through conversion of the associated debt to equity;
2. Startups get access to required R&D and IP management resources while deferring the associated costs;
3. Early-stage investors see that their potential investees are more likely to have the resources they need to succeed without diluting the impact of their investment; and

4. Funding agencies and taxpayers see positive economic impact through accelerated commercialization, with an increase in taxable revenue and employment, though the teachings of several authors suggest caution when using tax revenues as proxy for economic growth (Baiardi et al., 2019; Cornevin et al., 2024; Gurdal et al., 2021).

In contrast, an express license that simply awards the research institution with equity creates no such incentive beyond the desire to see growth in that equity.

Domestic benefit from IP commercialization

In the discourse about productivity and prosperity in Canada, many assert the need to maintain domestic control or ownership over IP assets (Matthews & Rice, 2022). While this may be an important consideration for ensuring return on investment for R&D spending, post-secondary technology licenses are not an effective vehicle through which to ensure IP retention in Canada since research institutions, including universities, generally have a low propensity to litigate IP-related matters, or assert other rights conferred in tech transfer contracts (Ascione et al., 2024). As such, any terms relating to IP retention or residency would have little practical impact if included in SAIL directly.

While the institutional equity resulting from conversion of debt accrued under SAIL ensures some value for the originating institution regardless of long-term control of the IP, we suggest that IP retention should be the focus of both upstream and downstream parts of the innovation pipeline, not SAIL. If such retention is desired, and recognizing that a Canadian licensee may not always be available, terms could be imposed by the tri-council agencies (e.g. NSERC) funding the research, or under the programs funding the commercialization (e.g. the National Research Council Industrial Research Assistance Program (NRC-IRAP) and the Strategic Innovation Fund (SIF)), which may have some form of repayment clause in their contracts if there is a sale to a foreign entity) as well as under other provincial and federal tax incentive programs. The approach taken by the IIA is worth examining carefully for this purpose (Stone, 2014).

A nonzero present cost component of the convertible debt could be used in cases where there is concern that the licensee is unlikely to achieve economic or social impact in Canada, for example in the case of a Canadian institution licensing to an American startup. In the vast majority of cases, however, we expect SAIL to be used by a research institution licensing to a Canadian a startup due to a clearly documented tendency for local licensing (Audretsch & Feldman, 1996; Mowery et al., 2001; Shen et al., 2022). In these cases, the upfront fee should be zero to avoid any barrier to tech transfer.

SAIL contemplates four key stakeholders or roles: a Licensee, a Licensor, an Investor the entity that holds the convertible debt), and a Research Institution. In most cases, however, the license will be a two-party agreement, with the Licensor, the Investor, and the Research Institution being the same entity. The ability to separate these roles gives added flexibility since many Canadian universities contract the management of tech transfer to third parties or wholly-owned subsidiaries that could play the role of Licensor, and many have recently established pre-seed *investment funds* (Durand & Mulcair, 2023; Ulrichsen et al., 2022) that could play the role of the Investor (the entity that holds the convertible debt/equity). Key responsibilities are clearly defined for each role in the license.

Under SAIL, a priced investment round (a valuation event) triggers the option, but not the obligation, for the startup to take ownership of the IP and terminate SAIL. In most cases, this event will coincide with conversion of the debt into equity. This is derived from the axiom of ownership, balancing the need to

ensure the economic viability of the licensee against the preference for ownership transfer by startups and investors. A predefined flat cost can be assigned to this event, which we suggest should be zero in cases where the licensee is a domestic startup.

While SAIL does not explicitly contemplate pro-rata rights, which would typically be covered in the related agreement for convertible debt, SAIL allows for a buyout fee charged on exercise of the option to take ownership. This cost can be used as a form of pro-rata rights by including it in the convertible debt at the moment of conversion in lieu of collecting it from the licensee. To ensure compatibility with the axiom of benefit, SAIL includes an assign-back clause in case the licensee fails or the licensor terminates with cause. The convertible debt and resulting equity may survive termination of the license.

The parties need to consider the potential effects of domestic bankruptcy and insolvency on IP licenses as well as the interplay of standardized licensing with competition/antitrust laws (Bruzzone & Capozzi, 2019; Correia et al., 2024; de Sousa, 2019; European Commission. Joint Research Centre., 2017; Patterson, 2010; ITU, 2024). Both issues should be the object of further research.

The option to transfer ownership requires exclusivity of licensing, otherwise the need to choose between non-exclusive licensees creates incentives that may conflict with value creation. On the other hand, exclusivity may not be compatible with the axiom of impact, since early stage technology portfolios are often multi-use in nature, and not all possible uses of the technology may be apparent at the time of licensing (Brenneis, 2024; Emerging Technologies, 2021; Krelina, 2021). SAIL reconciles this conflict with the mechanism of obligatory sublicensing suggested by AUTM (AUTM, 2007). When a third party expresses interest in obtaining a license to a technology, the primary SAIL licensee must either pursue commercialization of the IP in the *field of interest* of that third party within a specified period, subject to approval by the licensor, or it must issue a sublicense to that third party. Unlike the primary SAIL license, these sublicenses are royalty bearing, since most primary licensees are not set up to hold equity in third parties, and those third parties are more likely to be established companies for which an equity arrangement is not necessarily desirable. We expect this arrangement to seldom occur in practice.

Failure to comply with sublicensing terms renders SAIL non-exclusive, allowing the research institution to license directly to the third party, and invalidates the option of the primary licensee to take ownership. Note that sublicensing requirements do not survive termination of SAIL, which occurs on transfer of ownership, among other possibilities.

Technological milestones are commonly included in express licenses as a means to demonstrate progress toward commercialization, but the impact of their use appears to be poorly studied. Unlike many express licenses reviewed, aside from the valuation-related trigger, SAIL does not require payment of any fees related to technological or financial milestones. We believe that using milestones with associated fees risks distorting incentives. A milestone that triggers a cash payment may result in the licensee delaying realization of key results or pivoting to avoid the fee, or acting in other ways which may not be aligned with maximizing social or economic impact. So, while we encourage the collection of data with respect to commercialization, which could include reports on milestones (Carlsson & Fridh, 2002; Spann et al., 1995), SAIL does not include or allow for any associated fees.

Finally, AUTM guidelines (AUTM, 2007) recommend against automatically including rights to future IP (for example, improvements to the licensed IP) in licensing deals, or limiting the period and scope of automatic access to future IP. SAIL adopts this latter approach, defining improvements as any IP originating from the originating institution that could not be used without *infringing* on at least one claim of a patent already licensed, and to which the licensor has ownership rights, including automatic licensing of

anything fitting this definition within a period of 3 years (or earlier) or until ownership transfer, whichever is sooner. In practice, this is in the best interest of all stakeholders: any IP fitting SAIL's definition of "included intellectual property" is usually unusable to anyone except the primary licensee by definition, so there should be no reason to not license it automatically. This is also compatible with situations in which a third party administers tech transfer on behalf of a research institution: the requirement that the licensor be the owner of the IP avoids any conflict arising from the inability of that third party to bind the research institution to a contract.

Given the focus on cost reduction and deferral in the early stages of commercialization, this approach is also compatible with the Lean Startup approach startup building (Blank & Eckhardt, 2024; Shepherd & Gruber, 2021). A copy of the SAIL agreement (version 2) can be found in Supplementary Section S3, which includes all of the legal scaffolding, written in plain language (Government of Canada Communications Community Office, 2024) to satisfy the axiom of simplicity.

Conclusion

Streamlined tech transfer will improve tech transfer outcomes and the translation of publicly funded research into long-term economic and social gain, but the large number of express licenses in the ecosystem has so far not helped in Canada. We attribute this to contextual differences between the Canadian, American and International early-stage technology development ecosystems and the resources available to the respective institutions to effect and support commercialization activity.

We have provided a detailed comparison of a number of commonly used express licenses, building from them and from a review of the literature to create six axioms of tech transfer to inform improvements to express licensing templates. From these, we have constructed a novel express licensing framework, SAIL, that we believe better aligns the interests of all stakeholders while respecting the best practices of AUTM. The aim of this framework is to provide a tool that can be used to streamline the transfer of research to commercialization vehicles in contexts where resources may be hard to come by in the early stages of development, focusing on startups in recognition of their key role in the research commercialization process.

By using convertible debt, SAIL provides a stronger incentive for institutions to support commercialization than provided by existing express license models that are limited to payment by equity, royalties, and fees. SAIL is also designed to facilitate assignment of IP ownership once the licensee has demonstrated that they are a viable economic entity, to make long-term economic and social impact arising from publicly funded research more likely. While this requires absorption of greater cost by research institutions in the short term, SAIL ensures no limit to the upside of the long-term reward in the event the licensee is a success, allowing the research institution to be rewarded in proportion to the support it provides.

Without direct funding support for TTO cost recovery or significant structural changes at the institutional level to allow for absorption of costs on a timescale commensurate with commercialization outcomes to be fully realized, adoption of equity-only express licenses will be difficult at most Canadian institutions. For any express license to be effective, there must be broad "buy-in" (or support) from the innovation ecosystem (Granstrand & Holgersson, 2020). Table 1 shows that outside of the United States, there is not majority buy-in by institutions on the benefits of equity over cash flow for licensing.

In the course of our review, we found significant gaps in the literature and available primary data that should be the subject of future work. The economic and social impact of express licensing generally has

received very little attention. Neither the use of express licensing nor the duration of a licensing negotiation are reported metrics in AUTM's TransACT or any other database. We recommend that an examination of the impact of transaction speed on both licensing terms and long-term licensee outcomes be prioritized in future studies, which requires that these metrics be captured and made available by TTOs.

The impact of different mechanisms of consideration for licensing has received little attention, especially outside the United States. This could be rectified through a comparison of the value of equity on liquidation (Bruneel et al., 2020) under express licenses to royalties in a longitudinal study on revenues and valuations of licensees, as well as any knock-on ecosystem effects (Stuart & Sorenson, 2003). A study comparing royalties and equity was last attempted in 2000 (Bray & Lee, 2000), though we note that valuation by the market in Bray captures neither the full value of internally generated *intangible assets* (Simpson, 2024) nor broader ecosystem effects, nor the speed at which technology transfer is conducted, from the period of stakeholder interest (founder, investor) to negotiation, and subsequently to a definitive agreement.

SAIL builds on strengthening reporting requirements to capture this data. Both TTOs and university-attached pre-seed funds could collect this information. We note in passing that pre-seed funds may be better suited to hold convertible debt and resulting equity than TTOs, since they are constructed for investment purposes whereas TTOs generally are not. Defining and capturing the above data (e.g., pre-selected economic impact and social impact indicators) will be an essential part of continued evidence-based development of tech transfer policy.

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Statements and Declarations

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Supplementary Information for "Rocking the SAILboat: A Novel Approach to Technology Transfer Informed by A Comparative Analysis of Express Licenses"

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Supplementary Section S1: Glossary of Terms

Assignment

An assignment of intellectual property (IP) refers to the transfer of ownership of intangible assets, such as patents, copyrights, trademarks, trade secrets or any other form of IP, and related contractual rights or obligations, from one person to another.

Breach

A breach of a right or obligation means the breaking of a promise or a failure to perform an obligation required under an agreement.

- A material breach is a serious violation usually involving an essential or key element of the agreement.
- A non-material breach is a violation of a term that is not central to the agreement and is of lesser gravity.

Express license

An express licence is a license template that contains plain language standardized deal terms intended to reduce negotiation time and simplify subsequent legal drafting, to enable a final agreement to be reached more quickly and cost-effectively.

License

A license is an agreement that permits the use of Intellectual Property (IP, defined below). It sets out the scope of the license, including its duration, field of application, and geographical territory of operation. It may also deal with exclusivity, royalties or fees to be paid by the licensee, and other terms agreed on by the parties such as enforcement rights, publicity rights, among many others (Bobrowicz, 2007).

Intellectual property

Intellectual Property (IP) means inventions, whether or not patented or patentable, including related commercial and technical information, whether or not constituting trade secrets, and all copyrightable works, industrial designs, integrated circuit topographies, trademarks and distinguishing marks or guises, whether or not registered or registrable. More information can be found on the WIPO website.[3]

Intellectual property right

Generally, intellectual property rights are rights given to persons over inventions (i.e., something unique derived from intellectual creativity or capability). They confer legally enforceable benefits on the owners of the work. They also protect owners against use without consent.

Intangible asset

According to the IFRS Foundation,[4] intangible assets are non-monetary assets without physical substance. IP is an intangible asset.

Consideration (licensor consideration)

Licensor consideration refers to the value or benefit that the licensor (the owner of the IP) receives in exchange for granting to the licensee the right to use the IP. This consideration can take various forms, including:

- **Royalties:** This is the most common form of consideration, where the licensee pays a percentage of their revenue or a fixed fee;
- **Lump-sum payment:** A one-time payment made by the licensee to the licensor for the right to use the intellectual property; [check #1 to ensure lump-sum payment and fixed fee are not conflated or used interchangeably]
- **Equity:** An ownership stake in the licensee;
- **Cross-licensing:** Both parties grant to each other licenses to use their respective IP; and
- **Other non-monetary benefits:** This could include things like marketing and promotion of the licensor's brand, access to the licensee's technology or expertise, or research and development collaboration.

[3] See “What is Intellectual Property”, available on the WIPO website: https://www.wipo.int/about-ip/en/
[4] See https://www.ifrs.org/

Equity

Equity refers to the ownership shares in a company, which can be held by founders, investors, and employees. It represents a stake in the business.

When forming startups research institutions may take an equity position. Taking equity may provide benefits: the flexibility for licensing managers in structuring deals, the possibility that the research institution will still hold something of value if their technology is no longer used by the licensee, and faster revenue generation compared to a traditional license (Bray & Lee, 2000). AUTM data suggests that equity is much more commonly used in United States tech transfer than in Canada.

Equity rates vary, and traditional revenue rates (Hen, 2010) have significantly declined, including those that may be considered to be unfair or excessive in foreign jurisdictions.[5] Figure 1 of the main text of this article refers to a range of equity positions post-secondary institutions may take.

Anti-dilution protection (or provisions)

When new shares are issued at a lower price than that paid by earlier investors, or shares are sold as part of fundraising, equity dilution for existing shareholders can occur. Anti-dilution provisions are terms in equity instruments to help to shield investors from loss of ownership share without the need for further investment.

While quite commonly seen in equity-bearing licenses to new startups, anti-dilution is a contentious subject among early-stage investors. It can create incentives that are poorly aligned with startup growth. For example, if a significant fraction of the existing cap table has such protection, it can force founders to give up a larger share of their ownership in order to raise new finance, potentially reducing their incentive to build further value.

Pro-rata rights

A pro-rata right is a legal right that can be given to an investor to maintain their initial level of percentage ownership in a company during subsequent financing rounds by increasing their investment. This is a softer version of anti-dilution protection that is common among pre-seed investments.

Royalties

A royalty is a payment for the ongoing use of property, including tangible and intangible assets such as IP. A royalty may act as compensation to owners when they license their assets for another person's use, and is usually calculated as a percentage of net sales, with or without annual minimums. Incorrect setting of royalty rates may impede technology transfer (Doran et al., 2024). Most licenses in the AUTM TransACT database include some form of royalty.

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[5] It has recently been noted that there are growing tensions around spin-outs at British universities, following Oxford University Innovation Limited v Oxford Nanoimaging Limited, [2022] EWHC 3200 (Pat), and Independent review of university spin-out companies, conducted by Professor Irene Tracey and Doctor Andrew Williamson on behalf of the UK Department for Science, Innovation and Technology and His Majesty's Treasury. In the United Kingdom, His Majesty's Treasury issued terms of reference for research to gain a better understanding of tech transfer. The research addressed the elevated equity rates (20%+), compared to North American Universities. We are not aware of common practice with respect to equity in spin-outs among Asian Universities.

Sublicense Royalties

A sublicense royalty is a payment by a sublicensee to a licensor for the right to use IP that has been sublicensed to it by a licensee. Generally, it is a share of the revenue generated from the use of the licensed IP.

Minimum annual royalties

Minimum annual royalties are the lowest amount of royalties that a licensee must pay to a licensor in a year, regardless of sales or profits generated from the use of licensed property.

Fees; (lump-sum payments)

A fee or lump-sum payment is an amount of money paid by the licensee to the licensor, either immediately or on an ongoing basis throughout the lifetime of the license. Some licenses permit royalties to be credited against fees.

Milestones

Many licenses set out milestones that licensees must reach within a given period, penalizing failure with additional fees or the potential for loss of exclusivity or even loss of access entirely to the licensed technology. Milestones can be technical, financial, or hybrid in nature. Examples of milestones are found in the literature (Carlsson & Fridh, 2002; Spann et al., 1995). Achievement of a milestone may trigger other license clauses, such as payment of additional fees.

Technical milestone

A technical milestone is a checkpoint or specified achievement within a project or development process that signifies the completion of a specific set of technical tasks or the accomplishment of a critical technical objective. It marks a significant step towards the overall project goal and serves as a measurable indicator of progress.

Financial milestone

A financial milestone is a significant financial goal or achievement that marks progress towards a broader financial objective. Milestones can be short-term, mid-term, or long-term, and vary depending on individual circumstances, values, and priorities.

Exclusivity

An exclusivity clause is a contractual provision that grants one party the sole right to engage in a specified activity or transaction, restricting the other party's ability to engage with other potential contractors.

Sub-licensing

Sub-licensing may occur when a licensee permits another person to use the licensed IP. The sublicensee is generally subject to the same terms of the license between the original licensor and the granting licensee. Some licences may forbid or restrict the licensee from sublicensing the IP.

Return of IP (clawback provisions)

Return of IP refers to a requirement that IP previously transferred be returned to the licensor under certain conditions. See SAIL for an example. The execution of clawback of IP may be complicated if the licensee or assignee becomes insolvent[6]. Indeed, bankruptcy and insolvency laws can lead to a variety of outcomes, such as the non-return of IP, or compulsory licensing to others.

Field of interest

Field of interest means the target market sector for research, development, manufacture or sale of the products or services resulting from the licensee's use of the IP.

Improvement

A patent improvement refers to an innovation from or enhancement made to a patented invention. An improvement builds on the original concept but also introduces new features, processes, or functionalities that provide additional benefits or solve problems not addressed by the original patent. While the improvement may rely on the original patented invention, it must demonstrate novelty, usefulness, and non-obviousness to be eligible for a new patent.

Limitation of liability

A limitation of liability clause is a contract term that limits the extent of liability of a party for a specified occurrence or how much one party must pay the other for damages arising from a breach of contract, performance failure, or other specified circumstances.

Indemnification

An indemnification clause is a contract term that shifts costs, expenses or liability from one party to the other by requiring an indemnity in specified circumstances.

Representations and warranties

A warranty or representation clause is a contract term that provides assurance to the parties that certain facts or circumstances are true or will occur.

Assignor

An assignor is one who legally transfers rights or benefits under a contract to another person, the assignee, by a contract of assignment.

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[6] See, for example, "A Perfect Storm: Insolvency, exits and intellectual property", available at https://www.mvip.solutions/post/a-perfect-storm-insolvency-exits-and-intellectual-property

Assignee

An assignee is a person who receives the transfer of rights or benefits under a contract from the assignor.

Licensee

A licensee is a person granted permission to use property owned or controlled by a licensor, or to perform specified activities. The licensee may pay the licensor for the grant, share revenue arising, or issue shares in the enterprise.

Licensor

A licensor grants permission to a licensee to use property, in return for compensation from the licensee.

Startup

A startup refers to a company in the early stages of its operations.

Spinout

A spinout is a startup that has emerged from a post-secondary institution and has institutional faculty, employees, students, or alumni among its founders.

Investor

An investor is a person who commits capital to an enterprise with the expectation of receiving a financial return. Investors rely on different financial instruments to earn a return and accomplish important financial objectives, according to their investment thesis (Durand & Mulcair, 2023). The investment may be used to contribute to technological development, or specific innovation in science and technology applications while improving competitiveness of the enterprise.

Research organizations

In Canada, research institutions that engage in research may be guided and bound, as the case may be, by their mission, charter,[7] policies, directives, collective bargaining agreements or other similar contracts, the government's policy objectives, and the law.[8] Collectively, they are responsible for administering the bulk of Canada's research budget.

Since Canada has not adopted Bayh-Dole like legislation, Canadian institutional IP policies vary widely, ranging from inventor-owned policies, through hybrid models, to fully institution-owned policies similar in principle to those prescribed by Bayh-Dole (Hen, 2010; Kenney & Patton, 2011).

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[7] See for example The Royal Charter of McGill University | Secretariat - McGill University, available at https://www.mcgill.ca/secretariat/charter-statutes/royal

[8] For example, in the Province of Quebec, see: L-1.2 - Act respecting academic freedom in the university sector; E-14.1 - Act respecting educational institutions at the university level; M-15.1.0.1 - Act respecting the Ministère de l'Enseignement supérieur, de la Recherche, de la Science et de la Technologie.

Many research institutions have technology transfer offices (TTOs) that administer the licensing of the IP arising from their research. The literature indicates that TTOs "serve as intermediaries supporting the commercialization of new technologies in the market, with the aim of enhancing economic competitiveness." They "have long been recognized and studied as crucial knowledge brokers and intermediaries in the diffusion of research outcomes" (Borrás et al., 2024),and also play a role in patenting inventions and managing the ownership of IP generally (Brantnell & Baraldi, 2022) in the research and commercialization process (Van Norman & Eisenkot, 2017a, 2017b).

Institutional investment fund (or institutional fund)

An institutional fund is an investment fund that is affiliated with a research institution which invests in companies that are in some way also affiliated with the institution. In the United States, the funds commonly come from endowments. In Canada, there has been a recent emergence of not-for-profit pre-seed funds that invest philanthropic funding on behalf of donors.[9]

Public funding agencies

The governments of all countries allocate a portion of their budgets to research and development, administered through a variety of agencies or organizations. Generally, the broad goals of these agencies are to ensure that their countries remain technologically relevant, producing and contributing to the cutting edge of scientific work globally, and becoming more competitive.

In the United States, through Bayh-Dole, funding agencies that elect to take ownership of IP are also mandated to ensure commercialization of the research results where possible, by translating research outputs into economic entities that can bring lab-stage technologies to market. In Canada, while the mandates of the tri-council agencies (or capstone organization) are focused on economic and social impact, the means by which this is to be achieved are less clearly defined, usually deferring management of the IP that results from funded research to the research institution.

Uninvolved inventors and inventorship

An uninvolved inventor is an individual named as an inventor on a patent application (and eventually a patent if it comes to issue) who is not in any way involved in the commercialization process. Depending on the research institution's IP policy as well as the declaration (or record) of invention, an institution may attribute revenue according to their '*inventive contribution*' on a percentage basis[10] not to be confused with the legal notion of inventorship.

Inventorship refers to the inventor who has contributed the ingenuity necessary to create an invention. An invention may be the work of two or more inventors, sometimes referred to as co-inventors. It is important that the IP chain of development be verified to ensure continuity of creator or institutional IP ownership, and to avoid instances where confidentiality and non-disclosure agreements or other types of agreement are not signed, risking issues of incorrect or disputed inventorship, especially in cases where 'inventive ingenuity' may occur at different times, by different individuals.

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[9] See "On the Design of University Investment Funds for Deep Tech Commercialization", available at https://www.caninnovate.ca/p/on-the-design-of-university-investment-funds

[10] See, for example, the Invention Declaration form used by the University of Concordia, available at: https://www.concordia.ca/content/dam/concordia/offices/vprgs/docs/OOR119_Declaration_of_Invention.pdf

Supplementary Section S2: Repository of Express Licences

Express/Accelerated and/or Standard License	**Hyperlink**
University of Cincinnati	Express License Agreement - 1819 Innovation Hub | University of Cincinnati
Oxford University Innovation Ltd.	Standard express spinout Technology Licence
Woods Hole Oceanographic Institute	WHOI Express License
University of Maryland, Baltimore County	Express License Agreement (EXLA) – Division of Research & Creative Achievement – UMBC
University of California Berkeley	Standard Agreements | Intellectual Property & Industry Research Alliances
Florida State University	Fast Start 1Clik
University of Glasgow, King's College London, University of Bristol, University of New South Wales	Easy Access IP
University of Manitoba	Article
University of Saskatchewan	USask Fast License
Stellenbosch University	Instant Access Licensing
University of Minnesota	Home page
National Institute of Health	NIH Start-Up Exclusive License Agreements | Technology Transfer
Columbia University	BOLT
University of Colorado Boulder	EASE
University of Akron	University of Akron Express License
University of North Carolina	University of North Carolina Express License
Yale University	Software and Other
The University at Buffalo EXL, University of Cincinnati Express License/Option Program, The University of Georgia Industry Express Start Up License	Webinar

Supplementary Section S3: Simple Agreement for Innovation Licensing (SAIL, version 2)

THE USUAL DISCLAIMER: The proposed SAIL framework is intended to provide insight into how licensing professionals assist in commercializing IP arising, in whole or part, from publicly funded research. SAIL is not legal advice. SAIL is not to be used as a substitute for competent advice from a licensed professional in your province, territory, or state. SAIL is provided strictly as an explanatory and illustrative document and guide.

Nothing in the SAIL framework should be incorporated (directly or by reference) into any licence or similar agreement or instrument without the express written consent of the parties to the licence, or similar agreement or instrument. The authors of the SAIL framework, Kyle Briggs, David Durand (MVIP Solutions, Inc., and his professional attorney's corporation), Rami Alhamad (Action Potential), and each of their companies and affiliated persons disclaim any responsibility and assume no liability to any person for any consequences of using this or any other version of SAIL, or any related document.

ACKNOWLEDGEMENTS:

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David Durand

Rami Alhamad

Robin Ford

Tai Nahm

PLEASE SEEK ADVICE FROM AN ATTORNEY LICENSED IN YOUR JURISDICTION BEFORE RELYING ON THIS SAIL TEMPLATE AND RELATED DOCUMENTS, WHICH ARE SOLELY FOR PURPOSES OF EDUCATION AND GUIDANCE.

The **SIMPLE AGREEMENT FOR INNOVATION LICENSING** (the "**Agreement**") is entered into on [_____] (the "**Effective Date**"), by the following parties (the "**Parties**"):

"**Licensor**" means an organization existing under the laws of [Province/Territory], with a principal place of business at [_____] duly represented by [_____] as the individual so declares.

"**Licensee**" means a company existing under the laws of [Province/Territory], with a principal place of business at [_____] duly represented by [_____] as the individual so declares.

"**Research Institution**" means an organization that conducts publicly funded research existing under the laws of [Province/Territory], with a principal place of business at [_____] duly represented by [_____] as the individual so declares.

"Investor" means an organization existing under the laws of [Province/Territory] with a principal place of business at [_____], duly represented by [_____] as the individual so declares.

The Licensor, Licensee, Research Institution, and Investor are each referred to herein as a "**Party**" and collectively as the "**Parties**".

Background

The Licensor is the owner of certain Intellectual Property (IP) rights and technology described in Schedule A (the "**Technology**"), or all inventors have assigned all of their right, title and interest in and to the Technology to the Licensor;

The Licensee wants to obtain a licence to use, develop, and commercialize the Technology;

The Investor wants to obtain a minority ownership interest in the Licensee;

The Research Institution seeks economic or social impact through commercialization of the Technology; and

THEREFORE, the Parties agree to the following terms of this Agreement:

1. **Definitions**

"Acquisition" means the act of purchasing a good, service or asset in a business transaction or by contract. It can occur through the purchase of shares resulting in control or take-over of a company.

"Buyout Price" means the amount owed by a Licensee to a Licensor on taking ownership of the Licensed Technology (the "**Buyout**").

"Equity Financing" means a sale of shares in a company at an agreed-upon valuation.

"Future Costs" means costs incurred by the Licensor, Research Institution, or Investor to support the commercialization of Licensed Technology that the Licensee agrees may be added to

the convertible debt, and for which the relevant Party has not been reimbursed by some other means.

"Improvement" means adding something to an existing product or service by incorporating a new technology, or finding a new use for it including any modification, addition, extension, or derivative work of or from any Licensed Technology IP.

"Included Improvement" means an Improvement

1. created by an inventor affiliated with the Research Institution,
2. created in whole or in party by at least one inventor involved in creation of any of the Licensed Technology IP, and
3. with respect to which Licensor has the right to grant a licence.

"**Gross Sales**" means the sum of cash revenues received for the sale of Licensed Products and Service**s**, in a specified period, plus the fair market value of Licensed Products and Services transferred to a third party for consideration other than cash during that period.

"**Intellectual Property**" **(or "IP")** means inventions, whether or not patented or patentable, including related commercial and technical information, whether or not constituting trade secrets, and all copyrightable works, industrial designs, integrated circuit topographies, trademarks and distinguishing marks or guises, whether or not registered or registrable.

"**IPO**" means an initial public offering deemed to occur on the effective date of the registration statement filed with the applicable securities regulator for the initial underwritten sale of equity shares of the Licensee to the public.

"Jurisdiction" refers to the jurisdiction the laws of which govern interpretation of this Agreement.

"Licensed Products and Services" means any products or services that incorporate, are derived from, or are based on the Licensed Technology whether by the Licensee or a sublicensee under this Agreement.

"Licensor Royalty Share" means the percentage of sublicensee Net Sales owed by the Licensee to the Licensor.

"Net Sales" means Gross Sales minus:

1. discounts and rebates deducted by Licensee from the sale price of Licensed Products and Services;
2. taxes, tariffs, duties, and other governmental charges applicable to the sale of Licensed Products and Services and not separately reimbursed by the purchaser;
3. outbound transportation costs and insurance charges not separately paid or reimbursed by the purchaser; and
4. invoiced amounts written off as uncollectible, not to exceed 5% of Gross Sales.

"Past Costs" means the sum of costs incurred by the Licensor and Research Institution before the Effective Date to secure the Licensed Technology that have not been reimbursed through other means.

"Primary Field of Interest" means the market or sector into which Licensee intends to sell Licensed Products and Services beginning on the Effective Date.

"Upfront Fee" means the amount to be paid to the Licensor by the Licensee upon signing this Agreement that is not added to the convertible debt.

2. **Editable Fields**

[[*Nota: These values must be agreed between Licensee and Licensor before signing this Agreement*]]

Buyout Price is $_____[[$0 suggested for Canadian Licensees]]

Jurisdiction is _____ [[Usually the home province/territory/state of Licensor]]

Licensor Royalty Share is _____% [[0% suggested for Canadian Licensees]]

Past Costs is $_____

Present Costs is $_____ [[$0 suggested for Canadian Licensees]]

Primary Field of Interest is _____

Section 7: Access to Included Improvements Is ⬜/ Is Not ⬜ in force

Upfront Fee is $_____ [[$0 suggested for Canadian Licensees]]

3. **Licence grant**

   a. The Licensor grants to the Licensee an exclusive[11], worldwide, licence for the Technology, including its corresponding IP, to develop, commercialize, manufacture, market, and sublicense Products and Services using the Technology (the "**Licensed Technology**") subject to the terms of this Agreement.

   b. The Licensor grants the licence of the Technology "AS IS" without representation or warranty of any kind, express or implied, including warranties of merchantability, fitness for a particular purpose, or non-infringement of third-party IP rights. The entire risk as to the quality and performance of the Licensed Technology is with the Licensee. Unless required by law or agreed in writing, the Licensor will not be liable to the Licensee for damages, including any general, special, incidental, or consequential damages arising out of the use or inability to use the Licensed Technology.

4. **Investor consideration**

   a. In consideration of the licence granted under section 3, the Licensee and Investor must:

      i. execute an investment agreement for convertible debt owed by the Licensee to the Investor as set forth in Schedule B.

      ii. Agree on a fixed initial fee (the "Present Costs") to be specified in section 2 and added to the convertible debt issued under section 4.a.i.

[11] Madl, L., Radebner, T., & Stouffs, R. (2021). Technology transfer for social benefit: Ten principles to guide the process. *Cogent Social Sciences*, *7*(1). https://doi.org/10.1080/23311886.2021.1947560, available at: https://www.tandfonline.com/doi/full/10.1080/23311886.2021.1947560#d1e227.

b. The amount of convertible debt will be variable and will equal the sum of Past Costs, Present Costs, and Future Costs, minus the Upfront Fee.

5. **Sublicensing of Licensed Technology**

a. If there is third-party interest in licensing some or all of the Licensed Technology that falls outside the Primary Field of Interest, the Licensee must:

i. engage in good faith negotiations for a sublicence with the third party for a reasonable period, or

ii. submit a commercialization plan for the Licensor's approval and commercialize the product or service approved by the Licensor in the field of interest selected by the third party within the period agreed by the Licensor, not exceeding one year, unless an extension of time is granted by the Licensor.

b. If the Licensee does not grant a sublicence to some or all of the Licensed Technology or commercialize a product or service under section 5.a., then the Licensor must negotiate in good faith with the Licensee to achieve a reasonable sublicence or commercial plan within a reasonable period.

c. If a sublicence or plan is not effected under section 5.a. or 5.b., then the license granted under section 3 will forthwith become non-exclusive and the Licensor will have the right to grant a licence to the third party directly.

d. If the licence becomes non-exclusive section 5.c., then section 9 ("**Licence Buyout**") will not apply.

e. sublicences granted by the Licensee must

i. include reporting requirements compatible with, and equivalent to, section 8,

ii. include indemnity and limitation of liability to the Licensor and Research Institution as required in section 13, and

iii. exclude the right to further sublicense.

f. The Licensee must pay the Licensor annually a percentage of sublicensee Net Sales equal to the Licensor Royalty Share, due within [•/, e.g., 30] days of the end of the Licensee's fiscal year.

6. **Research Institution retained rights**

a. The Research Institution retains the right to use the Licensed Technology for non-commercial purposes, including research and teaching.

b. Subject to section 6.c. the Research Institution may publish related research in any form, after a review period of at least [•/, e.g., 30] days, sufficient to enable the Licensee to bring proceedings to prevent disclosure of unprotected IP or Confidential Information as defined in section 12.

c. The Licensee may not act under section 6.b. to delay thesis submission or defence, but the Licensee may require that a thesis be kept private (or confidential or under seal) for up to [•/, e.g., 1] year), or that the thesis defence be conducted *in camera*, or both.

d. If confidentiality obligations conflict with the Research Institution's retained rights to publish, the latter will prevail.

e. The Parties may not use the name or trademarks of another Party or the name of any of its employees or contractors in any publicity or advertising, including endorsements, without the prior written consent of the other Party unless the use is required by reporting obligations.

7. **Access to Included Improvements**

a. The Licensor must notify the Licensee in writing of the creation of any Included Improvements within [•/, e.g., thirty (30)] days of their creation.

b. Upon receipt of notification of creation of an Included Improvement under section 7.a., the Licensee has the option to add the Included Improvement to the Licensed Technology on payment of a fee to the Licensor, which shall be equal to the total of amounts paid by the Licensor, Research Institution, or Investor to secure IP protection for the Included Improvements.

c. If the Licensee elects not to exercise its option within [•/, e.g., ninety (90)] days following notification in writing by the Licensor under section 7.a., the Licensor may grant a license to said Included Improvement to a third party or allow the Included Improvement to enter the public domain.

d. If Included Improvements are licensed under 7.b. before the occurrence of a Triggering Event defined under section 9, Licensee may pay the required fee directly. Alternatively, if the Licensee and Licensor agree, the fee may be added to Future Costs and added to the convertible debt.

8. **Licensee reporting and data collection obligations**

a. The Licensee must provide to the Licensor within [•/, e.g., 30] days of the end of the Licensee's fiscal year, or within [•/, e.g., 30] days of receipt from a sublicensee, as the case may be,:

i. a list of all sublicensees that have access to any of the Licensed Technology;

ii. a detailed accounting of Gross Sales and Net Sales of the Licensed Products and Services;

iii. a detailed accounting of Gross Sales and Net Sales of the Licensed Products and Services of each sublicensee;

iv. a list of the countries where the Licensed Products and Services were sold, and the corresponding revenue attributed to each country;

v. any reports generated during an audit or inspection of a sublicensee's accounts, books, and records; and

vi. any other information required under this Agreement.

b. The Licensee must keep, and must ensure that each sublicensee keeps, true and accurate accounts and records of:

i. the fair market value of Licensed Technology (and corresponding Licensed Products and Services) produced, sold, and in stock;

ii. the Gross Sales prices of Licensed Technology (and corresponding Licensed Products and Services);

iii. all other accounting, stock, ordering, purchasing invoicing, and delivery records related to the Licensed Technology as are required by good accounting practice;

iv. sublicence royalties received and owing;

v. sublicences granted;

vi. relevant correspondence to and from sublicensees;

c. The Licensor, at its expense, may appoint a person to inspect the Licensee's books and records maintained under section 8.b. The appointed person, on 7 days prior written notice, may, during normal business hours, inspect and copy all accounts and records kept pursuant to section 8.b. The Licensor may initiate only one inspection in any 12-month period. The Licensee must reasonably cooperate with the appointed person to facilitate the inspection of its books and records.

d. If, on an inspection, the Licensor discovers any underpayment of the amounts rowed by the Licensee and the underpayment exceeds 5% of the amount owed, the Licensee must pay the amount owing forthwith.

9. **Licence buyout and license back**

a. The Licensee has the option to take ownership of the Licensed Technology, including all related IP rights, from the Licensor, on or after the occurrence of a Triggering Event and payment of the Buyout Price. In this Agreement, a "**Triggering Event**" means:

[*Nota: Other Triggering events that indicate the viability of the Licensee can be contemplated for the purposes of this section*]

i. agreement of the Licensee and Licensor as specified in the Non-Binding Guidelines in Schedule D, or

ii. an Equity Financing event, or

iii. conversion of the convertible debt issued under the agreement executed under section 4.a into shares of the Licensee, or

iv. an Acquisition or other similar event that allows founders of and/or early investors in a startup to realize the value of some or all of their share of ownership of the Licensee.

b. If the Licensee and Licensor agree, the Buyout Price may be added to Future Costs and added to the convertible debt.

c. Subject to section 9.b., the Buyout Price must be paid by the Licensee to the Licensor in full within 30 days of exercising the option for a Buyout. Upon receipt of the Buyout Price, the Licensor must transfer all rights, title, and interest in the Licensed Technology (and all related documentation) to the Licensee, free and clear of any liens, claims, or encumbrances.

d. On completion of the transfer of the Licensed Technology, this Agreement will terminate. No Party will have any further obligations or liabilities to the other, except for any

outstanding obligations that survive the termination of the Agreement as described in section 16.i.

e. If the Licensed Technology has been assigned to the Licensee as a result of a Triggering Event but the Licensee subsequently stops carrying on its business for any reason, the Licensee must provide the Licensor with an option to take back an assignment of the Licensed Technology, if the assignment does not conflict with another agreement or hypothecary rights related to the Technology.

f. If the Licensed Technology is assigned back to the Licensor under section 9.e., Licensor may provide to each sublicensee the option to license the Licensed Technology under substantially the the same terms as either the prior license to the Licensee or sublicense between the Licensee and the sublicencee, provided that:

    i. Licensor and sublicensee will discuss in good faith appropriate conforming modifications to such terms and conditions to the license between them, and

    ii. Licensor is not obligated to enter into a license agreement having a scope of obligation on the part of Licensor that would exceed those in this agreement or the applicable sublicense.

10. **IP management, administration and fees**

a. The Licensor is solely responsible for the management of the Licensed Technology during the term of this Agreement, including regulatory filing, enforcement, and maintenance of the Licensed Technology and its IP, as well as any Included Improvements that may form part of the licensed portfolio under section 7.

b. The Licensor will promptly notify the Licensee in writing of any expected fees for the administration of the Licensed Technology. The Licensee may either pay the fees or refuse to pay by notifying the Licensor in writing before costs are incurred by the Licensor, if time permits. If the Licensee chooses not to pay optional fees, the Licensee must accept the consequences of the refusal, including any impacts on IP protection, and Licensor will have the option to pay the fees themselves and to remove the applicable IP from the Licensed Technology IP.

c. If the Licensor chooses not to manage any Licensed Technology, the Licensee may, at Licensee's sole expense, take assignment of the Technology and assume responsibility for its management. The Licensor must then assign all rights, title, and interest in the Technology to the Licensee, free and clear of any liens, claims, or encumbrances, within 30 calendar days, or within the longer a period reasonably necessary to meet any related, required deadlines.

11. **Infringement**

a. Each Party must give prompt written notice to the other of any suspected or actual infringement by a third party of any of the Licensed Technology that comes to the attention of the Party.

b. The Licensee will have the first option (but not the obligation) to initiate and pursue proceedings against the third party. The commencement, strategies, termination, and settlement of any action or proceedings relating to the validity or suspected or actual infringement of the Licensed Technology will be decided solely by the Licensee who is not required to consult the Licensor. Any proceedings initiated and pursued by the Licensee will be at the expense of the Licensee. If the Licensee does not initiate or pursue proceedings within a reasonable period, the Licensor may do so at its expense

and, if appropriate, in the name of the Licensee. If the Licensee reasonably asserts in writing to the Licensor that proceedings may jeopardize any part of the Licensed Technology, including its validity, then the Licensor may not initiate or pursue proceedings.

c. The Licensor and Research Institution must make reasonable efforts to assist the Licensee in any proceedings related to claims of invalidity or infringement, including providing any supporting documents or evidence as reasonably requested by Licensee. If asked or permitted by the Licensee, the Licensor may participate in any proceedings initiated by the Licensee at the Licensor's expense.

12. **Confidentiality**

a. "**Confidential Information**" includes any information relating to a Party (the "**Disclosing Party**") received by any means by another Party (the "**Receiving Party**"), including trade secrets, inventions, know-how, technical data, business plans, and strategies, whether marked or expressly disclosed as confidential or not, and includes information that reasonably should be understood to be confidential given the nature of the information and the circumstances of disclosure.

[*Nota: Other definitions of Confidential Information can be contemplated for the purposes of this section*]

b. Confidential Information does not include information that:

i. is or becomes publicly known other than by a breach of this Agreement;

ii. is independently developed without use of or reliance on a Party's Confidential Information;

iii. is rightfully received by a Party from a third party without breach of an obligation of confidentiality;

iv. is approved for release in writing by the Disclosing Party; or

v. is disclosed pursuant to a requirement or request of a governmental agency or by law, as long as the Disclosing Party has provided notice in writing of the requirement or request to a Party that might be negatively effected at least [•/ e.g., 10] business days before disclosure, to allow the Party sufficient time to seek a protective order or other appropriate remedy.

c. The Receiving Party must not disclose, use, or permit others to use Confidential Information except as necessary to fulfill its obligations under this Agreement or as required by law.

d. The Parties must take reasonable measures to protect the confidentiality of Confidential Information, including imposing confidentiality obligations on its employees, contractors, and agents and assuming responsibility for any breach of confidentiality by those persons.

e. Confidentiality obligations will survive the termination of this Agreement for a period of [•/ e.g. 1 year].

f. On termination of this Agreement or at a Disclosing Party's request, the Receiving Parties must promptly return or destroy all Confidential Information and, if the information is destroyed, provide a certificate of destruction. On a request for return of Confidential

Information, the Receiving Parties may retain copies of Confidential Information that is essential for operation of this Agreement.

g. If there is an actual or suspected breach of confidentiality obligations, a Party must immediately notify the other Parties in writing, providing full details of the breach and any steps taken to mitigate its effects. Affected Parties may seek damages, equitable relief including injunctive relief, or indemnification for any resulting claims, liabilities, and expenses, as well as seek public retractions or corrections.

13. Limitation of liability and indemnification

a. Unless otherwise specified in this Agreement or in a related agreement, a Party will not be liable for delays in the performance of obligations under this Agreement or for loss of business or profit or indirect or consequential damages due to circumstances beyond its reasonable control.

b. The Licensee will indemnify and hold harmless the Licensor and Research Institution and their boards of directors, trustees, partners, officers, employees, agents, and representatives, from any claims and liabilities which the Licensee may incur, unless these claims and liabilities arise through the action or inaction of the Licensor or Research Institution with respect to the terms of this Agreement.

c. The Licensor and Research Institution shall indemnify and hold harmless the Licensee and its board of directors, trustees, partners, officers, shareholders, employees, agents and representatives, from any all claims and liabilities which Licensee may incur and which arise out of the negligence and/or omissions of such Parties' board of directors, trustees, officers, employees, agents, or representatives.

14. Dispute resolution

a. Each Party will cooperate with the others so that each may enjoy all rights conferred under the Agreement.

b. If a dispute arises under the Agreement, the Parties must first attempt to resolve the dispute amicably in good faith. If the Parties are unable to resolve the dispute within [•/ e.g. 30] calendar days, the Parties must jointly select a mediator and share the costs of mediation equally.

c. If the Parties cannot select a mediator or the mediation does not resolve the dispute within [•/ e.g. 60 or a reasonable period] calendar days, or if either Party refuses or fails to participate in mediation, the dispute must be resolved by binding arbitration conducted in the jurisdiction under the rules of the International Centre for Dispute Resolution Canada. The decision of the arbitrator will be final and binding on the Parties and enforceable in any court of competent jurisdiction. The costs of the arbitration, including the arbitrator's fees and any administrative fees, will be shared equally by the Parties, unless otherwise determined by the arbitrator.

d. Pending resolution of a dispute, the Parties must continue to perform their obligations under the Agreement, unless otherwise decided by the arbitrator.

15. **Term and termination**

a. This Agreement will take effect on the Effective Date and will remain in effect until the expiry of all registered IP associated with the Licensed Technology, including any Technology licensed under section 7.

b. The Licensee may terminate this Agreement:

   i. At any time by providing written notice at least [•/, e.g., 30] calendar days in advance of termination with payment of all fees owed to the Licensor at the date of termination, as well as any amounts that may be owed by the Licensee to any other Party to this Agreement.

      [*Nota: It is important that the terms of the investment agreement do not conflict with this section, in particular the order of repayment of funds, if any*]

   ii. By a Buyout under section 9.

c. The Licensor may terminate this Agreement if the Licensee:

   i. takes or is required by any person to take, any of the following actions: (A) an assignment, composition or similar act for the benefit of creditors; (B) an attachment or receiving of assets; (C) the filing of a petition for bankruptcy, insolvency or relief of debtors, or the institution of any proceedings relating to bankruptcy, insolvency or relief of debtors; (D) committing or threatening to commit any act of bankruptcy; or (E) a winding-up, liquidation or dissolution of the business;

   ii. ceases its business operations;

   iii. fails to reasonably commercially exploit,[12] or intend to commercially exploit, the Licensed Technology for a continuous period of [•/, e.g., 12] months;

   iv. or any of its key personnel is convicted of an indictable offence;

   v. materially breaches any term of this Agreement and fails to correct the breach within a reasonable period of time agreed between Licensee and Licensor after receiving written notice from Licensor.

d. Licensor may provide to each sublicensee the option to license the Licensed Technology under substantially the the same terms as either the prior license to the Licensee or sublicense between the Licensee and the sublicencee, provided that:

   i. Licensor and sublicensee will discuss in good faith appropriate conforming modifications to such terms and conditions to the license between them, and

   ii. Licensor is not obligated to enter into a license agreement having a scope of obligation on the part of Licensor that would exceed those in this agreement or the applicable sublicense.

16. **General provisions**

[12] Commercial exploitation usually requires that an entity “make, have made, use, have used, import, export, and to sell, offer for sale or have sold a product” and/or solution (see here). In other words, there is an exchange of valuable consideration. Valuable consideration is generally defined as “a necessary element of a contract, which confers a benefit on the other party. Valuable consideration can include money, work, performance, assets, a promise or abstaining from an act” (see here). However, it is plausible that licensed IP may take more than a year of research before revenues are generated. In some cases, technology milestones are used to assess commercialization progress (see here). THe SAIL framework seeks to avoid situations in which payments are triggered by realization of technology-based milestones, and seeks to avoid distorting incentives.

a. All notices, reports, requests, consents and other communications between the Parties under or related to this Agreement must be in writing, delivered by regular mail or by electronic mail, to the authorized representative of a Party, as follows:

	To Research Institution:	**To Licensee:**	**To Investor:**	**To Licensor:**
Name:				
Department:				
Address:				
City, Province/Territory/State:				
Postal/Zip Code, Country:				
Tel:				
Email:				

b. Except as otherwise provided in the Agreement, no Party may assign any of its rights or delegate any of its obligations without the prior written consent of the other Parties, but a Party may assign any of its rights and delegate any of its obligations to a person that acquires substantially all of the Party's assets, whether by share sale, merger, asset sale, or other change of control.

c. No waiver of, or failure by a Party to enforce, a right or failure or insist on strict performance of this Agreement will prevent the Party from subsequently enforcing its rights or insisting on strict performance. No waiver or failure to strictly enforce rights will affect the validity of the Agreement.

d. The invalidity or unenforceability of any provision of this Agreement will not affect the validity or enforceability of the Agreement as a whole or any other of its provisions.

e. If a conflict of interest arises, the Parties:

   i. will subject and avail themselves to and of the Research Institution's procedures and codes of conduct for the resolution of conflicts of interest; but

   ii. no Party will have the authority to assume or create any obligation or liability, either express or implied, on behalf of another Party.

f. Les Parties ont requis que cette entente soit rédigée en anglais. The Parties have requested that this Agreement be drafted in English.

g. This Agreement is governed by and construed in accordance with the laws of the Jurisdiction.

h. Headings are used for convenience only and do not affect the interpretation of the Agreement.

i. The provisions of Schedule B, sections 3.b., 9.e., 9.f., 12, 13, and 14, and all payment obligations, including for outstanding fees, royalties, and cost reimbursements, will survive termination or expiry of this Agreement.

j. This Agreement may be executed by signatures delivered by facsimile transmission or electronically in optically scanned form. The Agreement may be simultaneously executed by the Parties in multiple counterparts, each of which will be considered to be an original instrument, and all of which taken together will constitute one and the same instrument.

[*Signature page follows*]

The undersigned have caused this Agreement to be duly executed and delivered on the Effective Date.

Licensee:

Name of authorized signatory:

Title:

Date:

Signature:

Licensor:

Name of authorized signatory:

Title:

Date:

Signature:

Research Institution: (If different from Licensor)

Name of authorized signatory:

Title:

Date:

Signature:

Investor: (If different from Research Institution and from Licensor)

Name of authorized signatory:

Title:

Date:

Signature:

SCHEDULE A
Technology

[•/ L*ist all licensed Intellectual Property, including patents, trademarks, copyright, plant breeder rights, industrial designs, trade secrets. It can further include*:

1. *trademarks*
2. *service marks*
3. *brand names*
4. *trade dress*
5. *logos*
6. *trade names*
7. *domain names*
8. *corporate names and other indications of origin*
9. *the goodwill associated with Intellectual Property and related registrations in any jurisdiction of,*
10. *applications in any jurisdiction to register Intellectual Property including any*
11. *extension, modification or renewal of registration or application;*
12. *inventions, discoveries, designs and ideas, whether patentable or not, in any jurisdiction;*
13. *patents,*
14. *applications for patents, including*
    a. *divisions,*
    b. *continuations in whole or in part,*
    c. *renewal applications,*
    d. *any renewals, extensions, reexaminations or reissues in any jurisdiction;*
15. *design registrations and applications, in any jurisdiction;*
16. *non-public information (or Confidential information),*
17. *trade secrets and confidential information, including*
    a. *know-how,*
    b. *technical data,*
    c. *manufacturing and production processes and techniques,*
    d. *customer and supplier lists,*
    e. *pricing and cost information,*
    f. *and business and marketing plans and proposals and rights in any jurisdiction to limit use or disclosure by any person;*
    g. *writings,*
    h. *computer software,*
    i. *other works, whether copyrightable or not, in any jurisdiction;*
    j. *registrations or applications for registration of copyrights in any jurisdiction, and*
    k. *renewals or extensions; and*
    l. *any similar Intellectual Property or proprietary rights, including market authorizations, if applicable*.]

SCHEDULE B
Investment Agreement

[*Append a copy of the investment agreement concluded between the parties*]

As noted in the main text, the types of investment agreement contemplated by SAIL can be a SAFE, KISS, convertible note (Coyle & Green, 2018), or other types of agreements in accordance with the six axioms. Samples of investment agreements can be found at:

Investment Agreements:

- SAFE, see: https://www.ycombinator.com/documents/ and the SAFE User Guide, and the SAFE.
- KISS
- Crowdfunding
- Convertible debt

Factors to consider:

- Quantification of the amount of convertible debt, which could include:
    - Costs incurred by Licensor or Research Institution in securing and protecting the Licensed Technology that were not have been spent in the normal course of publicly funded research, e.g. patent filing fees.
    - An Upfront Fee; and
    - Additional costs incurred by Licensor, Research Institution, or Investor in support of the Licensee after the Effective Date but before conversion of the convertible debt. These costs must be agreed by the Licensee and the other Party to be added to the convertible debt. They could include:
        - Costs incurred by Licensor or Research Institution to secure and protect the Licensed Technology.
        - Legal or IP portfolio management services,
        - The value of lab space or access to specialized equipment.

SCHEDULE C
Ancillary Agreements

FOR INFORMATION ONLY:

Other/Ancillary agreements the Parties may consider include:

1. Service agreements for services provided by the Research Institution or Licensor to the Licensee (e.g., laboratory technicians.)

2. Lease for research space in Research Institution premises

    a. See: Space Guidelines | Environment Faculty and Staff Resources | University of Waterloo

3. Research and collaboration agreement, e.g.:

    a. Sponsored Research and Collaboration Agreement – University of Toronto

    b. Collaboration Agreement – McGill University.

4. Material transfer agreements

5. Non-disclosure or confidential disclosure agreements (NDAs/CDAs)

6. There are other examples on the World Intellectual Property Organization's website here.

SCHEDULE D
Non-Binding Technology Transfer Guidelines or Guiding Principles

These non-binding guidelines may assist the Parties to determine the factors affecting a decision to license IP to a startup. Recognizing that IP ownership is usually of more value if the IP is commercially exploited and that research institutions do not, as a rule, commercialize IP themselves, the guidelines should help them provide sound governance of IP while also supporting the transfer of IP to the private sector to realize its economic benefit or societal value.

The six axioms are:

1. A license should not unduly limit innovation or the use of publicly-funded research outputs from to realize economic benefit (*axiom of benefit*);

2. Ownership of the IP should transfer from the academic institution to the licensee if there is sufficient evidence to conclude that the licensee is an economically viable entity *(axiom of ownership)*;

3. Valuation of an IP portfolio should be deferred until the market has been established *(axiom of valuation)*;

4. Every dollar available to a startup should be used to build value in the IP portfolio (*axiom of value creation*);

5. The equity taken in consideration of tech transfer activities should be commensurate to the cost of commercialization (*axiom of incentivization*); and

6. License templates should be understandable and usable by someone without legal training (*axiom of simplicity and clarity*).

In addition, the Parties will:

1. Favour ongoing dialogue and prompt communication, before, during, and after a transaction;

2. Recognize that while it is usually too early to accurately assess the value of a commercial opportunity when technology is transferred, this uncertainty should not impede a good-faith attempt at commercialization;

3. Recognize the perception or potential of *conflict of interest*[13] arising from research institution commercialization activity involving active members of the lab that originated the IP, and engage

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[13] For more information on conflicts of interest in research, please consult:

- (PDF) Managing Conflict of Interest in Research: Some Suggestions for Investigators
- Conflicts of interest in research: looking out for number one means keeping the primary interest front and center - PMC
- July 12 2022 GCP Lecture Conflicts of Interest - Managing and Preventing Research Risk.pdf
- A question of method. The ethics of managing conflicts of interest - PMC
- Further insights on institutional conflicts of interest in research settings - Yew Long Lo, 2020
- Conflicts of interest and Scientific Societies | Neurological Sciences
- Sponsorship, conflict of interest, risk of bias, and reporting of participant's flow and baseline demographic information in studies applicable to the federal law to post the results in clinicaltrials.gov - ScienceDirect
- A framework is proposed for defining, categorizing, and assessing conflicts of interest in health research - ScienceDirect

in transparent and active dialog to establish a framework to mitigate any issues in a way that is compatible with research institution policy;

4. Recognize the need for publicly-funded institutions to ensure that licensing is fair and equitable for all inventors, including those who may not be directly involved in the commercialization of the research;

5. Identify reasonable criteria or milestones to trigger the sale or assignment of IP to the startup based on the principle that IP generated using public funding should only be transferred to the private sector when there is a reasonable expectation that the transfer will result in economic or social benefit, i.e. that the startup is now economically viable; and

6. Recognize that innovation requires ongoing data-driven development, and commit to long-term collection and provision of data in support of this goal

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