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Business and Innovation Law I, 30 hec

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Appendix

BCL CASE - MEMO

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1. Introduction to the case

1.1 The background

The venture operates within the landscape of microbial plastic innovation, a field centered on organisms that can degrade and metabolize synthetic polymers. The technological foundation rests on discoveries, such as the *Ideonella sakaiensis* bacterium isolated in 2016, which uses enzymes (PETase and MHETase) to break down PET plastic into its base monomers: terephthalic acid (TPA) and ethylene glycol (EG). This chemical recycling approach is distinct from mechanical recycling and has drawn significant commercial attention. One of the early commercial leaders in this domain is the French industrial biotech firm Carbios, which focused on optimizing enzyme-based systems for PET deconstruction and secured early intellectual property (IP), including Patent WO2014079844A1 (Patent 1).

However, in early 2025, Carbios announced a major reorganization, shifting its strategic focus away from complex microbial systems and leading to the wind-down of a specialized internal group focused on genetically engineered plastivorous bacteria. The researcher who led this bacterial project, Linnea, subsequently departed Carbios and accepted a faculty position at Chalmers University of Technology. Through a mutual agreement[1] with Carbios, Linnea retained rights such as non-exclusive academic access to the bacterial strains and protocols developed by her former team. This transition forms the basis of the current initiative, leveraging technology that was partially deprioritized by Carbios, though the legal contours of IP ownership and access remain an initial constraint.

The initiative is a research and innovation project at Chalmers University, established following the researcher Linnea's arrival, and is supported by Karin Ekström from the Chalmers Innovation Office. My mandate, provided by Karin Ekström, is to serve as legal expertise, conducting a reactive and proactive legal investigation to guide the initiative's management of its intellectual assets and project formation. The core technical asset we are analysing is the promising, engineered bacterial strain capable of degrading PET, along with associated protocols, preliminary data, software's associated with the business and business intelligence. Based on preliminary analysis, the venture's chosen business idea is Plastic recycling and monomer recovery for B2B selling, specifically utilizing the enzymatic depolymerization process derived from Patent 1 to yield both TPA and EG, which offers a larger market potential than the single monomer output of the Patent 2 technology.

1.2 Our work

Our legal work focuses on several critical challenges: clarifying the ambiguous verbal agreement between Linnea and Carbios regarding the use of Patent 1; conducting an extensive legal evaluation of the resource base (Patents, Copyright, Trade Secrets, and Labour Law); and ensuring the protection of crucial "soft intellectual assets" such as process efficiency data, performance parameters, and the predictive PlastiPredict software. Our role includes actively

[1] There are many factors concerning the agreement that are unknown, such as the details, the circumstances around the conclusion of the agreement and the subjects of the agreement.

contributing to business development while simultaneously establishing the necessary legal controls and procedures to facilitate a sustainable and value-generating innovation process.

The venture is founded on a proprietary business model, specifically “Strategy 1: Own Bioreactor Facility”, designed to capture maximum value within the high-growth market for sustainable virgin-grade plastics. Our core business idea is Plastic recycling and monomer recovery for selling B2B. The global market we are targeting is substantial, with the purified terephthalic acid (TPA) market alone valued at $51.47 billion in 2025 and projected to reach $80.05 billion by 2034. We focus on selling high-purity TPA and ethylene glycol (EG) monomers as virgin-grade feedstock directly to B2B clients, including major producers in the packaging (e.g., Logoplaste, ALPLA Group), chemical (e.g., BASF), and textile industries (e.g., Celys). This specific strategy was chosen because recovering two monomers (TPA and EG) offers a significantly larger market potential than alternative process systems.

The solution centres on a specialized enzymatic depolymerization process, which utilizes technology derived from Patent 1. This system converts post-consumer PET waste (provided as cleaned and sorted flakes) into its base chemical components. The process is carried out in a controlled Stirred Tank Reactor (STR), where a proportional dose of recombinant enzyme is added under optimized temperature and pH conditions. Crucially, the engineered strain used in the technology is modified so that the microorganisms cannot metabolize or consume the resulting TPA and EG monomers, ensuring a high recovery yield suitable for upcycling back into new polymer products. By pursuing Strategy 1, we establish and operate our own facility, allowing for full control over production, quality, and process optimization, thereby enabling the venture to capture 100% of the revenue from monomer sales.

Our legal work supports this high-control strategy by addressing critical intellectual property (IP) challenges that underpin the venture's formation. The technical foundation relies on technology related to the Carbios patent (Patent 1), but access rests on an unclear verbal agreement between the researcher Linnea and Carbios, creating potential legal exposure. Therefore, a primary function of "our work" is to resolve this ambiguity through a clear and concise legal strategy, ensuring a sustainable contractual arrangement to secure access to the necessary process. Furthermore, Strategy 1 depends heavily on securing crucial "soft intellectual assets", proprietary information not covered by patents, such as PlastiPredict software (a predictive model), and internal data related to process efficiency and performance parameters. We must proactively establish formal internal IP and data management policies and confidentiality routines, including systematic document classification and securing NDAs for external collaborators, to prevent the loss of these trade secrets, especially given the researcher’s commitment to academic openness. Without securing these "soft assets," competitors could easily imitate the core business idea, particularly since the underlying Patent 1 is mature and approaching expiry around 2032.

1.2.1 Project Formation: The Non-Registered Partnership

As the project is beginning to take form we have chosen to start trough a non-registered partnership. This legal status arises where two or more persons have agreed to engage in an activity as a partnership, but the partnership has not been formally registered in the trade register.[2] This classification carries profound implications for the venture’s ability to conduct

[2] Ch. 1 Sec. 3 Partnership and Non-registered Partnership Act (SFS 1980:1102)

business. Specifically, a non-registered partnership may not acquire legal rights or assume obligations, nor can it institute proceedings in courts or before other public authorities.[3] This lack of legal personality creates immediate operational risks, particularly concerning the core task of securing rights to Patent 1 via negotiations with Carbios, as any licensing agreement must currently be contracted in the name of the participating individuals rather than the venture itself.[4]

This interim legal structure necessitates meticulous management of liability and requires immediate steps toward formal incorporation. In a non-registered partnership, the internal relations, rights, and obligations between partners are generally determined by agreement.[5] However, regarding external commitments (such as purchasing equipment or securing supplier contracts), rights and obligations accrue only to the partner who participated in the agreement. If multiple partners participate in an agreement, they are jointly and severally liable for the ensuing obligations.[6] This places the burden of contractual and financial risk squarely on the shoulders of the individual partners involved until the organization achieves corporate status, such as becoming a limited liability company (*aktiebolag*).

Therefore, we proactively focused on identifying these critical contracts and establishing a robust system of internal controls and documentation to ensure fair liability distribution and accommodate the future incorporation of the initiative, thereby establishing the sustainable contractual arrangement mandated by the assignment. Through our agreement document we have set up a structure wherein one individual is not solely liable for the obligations; we have outlined a method of entering commitments where – if everything is according to the set structure – the liability is split equally throughout the group.

1.3 How the IP relates

The venture's viability depends on securing access to and control over the intellectual property forming the legal foundation for the enzymatic depolymerization process. The interplay between patent rights, trade secrets, and academic openness defines both the project's opportunities and constraints, requiring a strategy that balances access, compliance, and exclusivity.

Derived from researcher Linnea, we have specifically studied two patents that are relevant for the specific depolymerization process that has substantial leap in effectivity in relation to priorly known methods. Linnea herself has been a part of the groundbreaking research that formed the specifics of the patents, therefore she herself holds unvaluable knowledge that are crucial for the further development of our project.

Predominantly IP rights are parted in two distinct types of rights: hard rights and soft rights. Hard rights are what the formal processes and societal structures allow to be formally protected. Examples of hard rights are patents, copyright and design protection. These rights are formally acknowledged and have a legal structure that even allows transferring of the

[3] 1:4
[4] Ibid. Ch 4 sec. 5.
[5] 4:1
[6] 4:5 2st.

rights, hindering other parties from using the rights and sanctions in the case of infringement. You could call these passively protected rights as the right holder doesn't constantly need to act to be able to keep the rights.

Soft rights are not formally protected in the same way; they are usually more abstract and connected to the people that hold them and require active protection. Soft rights are usually and predominantly company know-how that can be materialised in different ways, but in its core, the knowledgebase that a company holds is the makeup. However, there are legislations that protect these rights as well, for example the Trade Secrets Act. These require active secrecy keeping and agreements and structures that protect these IPs to reach public knowledge, where they are less controllable and – you could say – unprotected.

2. Identification of Intellectual Property Assets and Their Legal Characteristics.

This section details the legal nature of the venture's intangible assets, categorizing them based on the type and scope of legal protection available. This analysis is crucial for establishing the commercial viability and legal defensibility of the business idea, ensuring compliance with the legal requirements outlined in the overall assignment.

The analysis has been conducted under Swedish law. Unless otherwise stated, it is assumed that corresponding national jurisdictions apply comparable legal principles and regulatory frameworks, allowing for analytical consistency across borders.

2.1 Hard rights

Hard rights refer to intellectual property (IP) rights secured through formal registration, which grant the holder a legally enforceable statutory monopoly. The legislators have chosen to protect these works to create incitement for the creators to publicise and disseminate their innovations to society, thereby balancing private incentive with public access to knowledge.

2.1.1 Patent

Patent protection is governed by the Patent Act (2024:945)(PL). Patents may be granted for inventions in all fields of technology if they are new, have an inventive step, and are industrially applicable.[7] A patent grants the holder the exclusive right to commercially exploit the invention.[8]

This category includes Patent 1 (ES2707304) and Patent 2 (EP3794133), both of which are active or have active granted family members, covering aspects such as the plastic recycling method and engineered microorganisms for conversion. The claims must clearly define the invention using technical and other features.

2.1.1.1 Carbios

The European patent held by Carbios, protects a biological method for recycling plastic products – notably polyethylene terephthalate (PET) – through enzymatic depolymerization using cutinase enzymes. The process enables plastic waste to be broken down into its base monomers, terephthalic acid (TA) and ethylene glycol (EG), which can then be repolymerized into new plastics. The patent's claims cover both direct enzymatic degradation by purified cutinase and biological degradation using recombinant microorganisms engineered to express or excrete such enzymes while preventing monomer consumption. This confers broad protection over microbial and biochemical recycling routes for PET and related polymers.

[7] 2:8 PL
[8] 1:1 PL

Under Swedish law the invention qualifies as patentable subject matter encompassing both a biotechnological process and biological material with industrial applicability[9], making the patent's legal scope a key dependency for any downstream user seeking to commercialize enzyme-based PET recycling.

The patent has been filed and been granted in the following jurisdictions; Canada (CA), Switzerland (CH), China (CN), Germany (DE), Spain (ES), France (FR), United Kingdom (GB), India (IN), Italy (IT), Japan (JP), Lithuania (LT), Netherlands (NL), Turkey (TR), United States (US).

The jurisdictions within the European Patent Convention (EPC) where protection has been granted derive such protection from a single European patent application, which upon grant by the European Patent Office (EPO) must be validated nationally in order to obtain legal effect. This system follows from Article 2(2) and Article 65 EPC, stipulating that a European patent confers the same rights and is subject to the same conditions as a national patent once validated in a contracting state. Correspondingly, under Chapter 11, Sections 1–2 of the Swedish Patent Act (2024:945), a granted European patent attains legal force in Sweden only after timely submission of the required translation and payment of prescribed fees. Consequently, the granted EPC jurisdictions reflect those national systems in which Carbios has completed such validation procedures following the EPO's grant of EP2922906 B1.

Researcher Linnea has trough her research contributed to the discovery of the patented technology and is credited as one of the inventors. As of her departure from Carbios she has withheld rights connected to the patented technology. In section 3.1.1 below you will find an investigatin into Linneas rights to the patent.

2.1.1.2 UT Patel

Patent 2 (WO2019222396A1), originating from UT Patel, concerns engineered microorganisms co-expressing PETase and MHETase. Although it enhances metabolic efficiency, its scope may overlap with Carbios's claims.

The United States patent US 12,371,718 B2, assigned to the Alliance for Sustainable Energy, LLC and UT-Battelle, LLC, protects a biotechnological process for the enzymatic deconstruction and biological upcycling of poly(ethylene terephthalate) (PET). The invention combines catalytic glycolysis with engineered Pseudomonas putida microorganisms expressing PETase and MHETase enzymes to depolymerize PET into bis(2-hydroxyethyl) terephthalate (BHET), terephthalic acid (TPA), and ethylene glycol (EG), which are subsequently converted into higher-value compounds such as 3-ketoadipic acid. The patent thereby covers both the biochemical deconstruction of PET and the metabolic engineering of microorganisms to utilize and transform the resulting monomers.

From a Swedish legal standpoint, the invention qualifies as patentable subject matter encompassing both a microbiological process and the resulting biological material with industrial applicability, pursuant to Chapter 2, Sections 1, 5 and 6 of the Swedish Patent Act (2024:945). As such, the scope of protection would extend—were it validated in Sweden—to

[9] Patentlagen [2024:945], Ch. 2 §§ 5–6

the use of engineered microorganisms or analogous enzymatic processes aimed at depolymerizing or upcycling PET and similar polymers.

The patent is filed and granted in the United States and has no current validated counterpart within the European Patent Convention (EPC) system. Accordingly, it enjoys territorial protection exclusively within the U.S. under 35 U.S.C. § 154, while its potential enforceability in Sweden or other EPC jurisdictions remains dependent on separate filings or validations under the EPC framework or national patent acts.

2.1.2 Copyright

Copyright protection is established under the Act (1960:729) on Copyright in Literary and Artistic Works (URL). This right applies to literary or artistic works, including computer programs, and grants the author the exclusive right to reproduce the work or make it available to the public. The transfer of copyright may occur, in whole or in part, by agreement, but may not contravene the copyright to the original work.[10]

2.1.2.1 Software – PlastiPredict

PlastiPredict is a machine learning software developed for simulating the microbial enzyme degradation process and maximising efficiency within the processes of depolymerisation. The software has been developed by researcher Linnea and specialised developers from Chalmers.

According to Ch. 1 sc. 1 p. 4 URL, computer programs are protected under copyright, however the law does not state specifically what that is protected. For that we need to move our sights to the doctrine. According to scholars the rights of copyright protects the source code itself, that will say, the specific building blocks that comprise the running software. No party other than the rightsholder can duplicate, distribute or otherwise delegate access to the protected source code without the rightsholders consent.[11] This however does not protect the processes or logic that the code is built upon, therefore others may recreate the functions of the software without any consequences.

Under Swedish copyright law, the author may, through agreement, transfer or license certain economic rights to others while retaining moral authorship. According to Chapter 3, Section 28 of the Swedish Copyright Act (1960:729), a copyright may be wholly or partially assigned, or subject to conditions limiting its use. This provision forms the legal basis for licensing arrangements, allowing the rightsholder to define the scope, duration, and permissible use of the protected work.

Determining ownership of PlastiPredict requires an assessment of the conditions under which the software was developed. Pursuant to Chapter 1, Section 7 of the Copyright Act, the initial copyright vests in the individual creator unless otherwise agreed or arising from employment circumstances. Should the developers have acted within the scope of employment at Chalmers, the economic rights may accrue to the university in accordance with contractual or institutional policy. If the work was produced outside of such employment, Linnea would retain the rights as the principal author. Furthermore, if the software incorporates open-source

[10] Enkel källa som bara fastställer detta, 1:2 URL
[11] nått

components, the applicable licence terms must be examined to determine if they permit commercial usage and whether derivative use is restricted by copyleft obligations or other licensing conditions.

The concept of copyleft refers to a category of open-source licences that require derivative works to remain subject to the same licensing terms as the original software. In essence, while copyleft licences (such as the GNU General Public License, GPL) permit free use, modification, and distribution, they also impose a reciprocal obligation: any modified or extended version must likewise be distributed under the same open-source licence. This principle preserves the openness of the software ecosystem but may conflict with proprietary or commercial objectives, as it prevents the incorporation of copyleft-licensed components into closed or confidential codebases. For the PlastiPredict software, this is highly relevant because the inclusion of copyleft-licensed modules could legally compel the venture to disclose its modified source code, thereby undermining any trade-secret and exclusivity strategy.[12]

Beyond copyright protection, the PlastiPredict software and its source code may also be safeguarded as a trade secret, provided that adequate secrecy measures are implemented. Under the Swedish Trade Secrets Act (2018:558), specifically Sections 2 and 3, information qualifies as a trade secret if it (i) concerns business or operational circumstances, (ii) is not generally known or readily accessible to persons who normally deal with such information, and (iii) the holder has taken reasonable steps to keep it secret. In practice, this requires formalized confidentiality routines, such as restricted access, non-disclosure agreements (NDAs), and documented internal policies governing storage and dissemination. Without such measures, the information cannot attain or maintain protection under the Act. Accordingly, by institutionalizing secrecy management, the venture can extend legal protection not only to unregistered proprietary code, models, and datasets but also to complement and reinforce the protection of already copyrighted material.

2.1.2.2 Database

Linnea possesses proprietary datasets containing process efficiency metrics and performance parameters generated through experimental work. Under the Swedish Copyright Act (1960:729), specifically Chapter 5, Section 49, a database or compilation of information may be protected by copyright if the selection or arrangement of its contents constitutes an independent and original intellectual creation. Furthermore, even in the absence of such originality, a database may enjoy sui generis protection if it results from a substantial investment in obtaining, verifying, or presenting its contents.

Copyright in this context protects the structure and organization of the dataset, the creative selection and compilation, rather than the factual information itself. Consequently, the protection does not prevent third parties from using or reproducing the underlying data, provided they do not copy the protected structure or presentation. In practice, enforcement is further complicated by the difficulty of detecting and proving unauthorized data use.

To strengthen protection, such datasets can also be classified and maintained as trade secrets under the Trade Secrets Act (2018:558, Sections 2–3), provided that the information is of commercial value, not generally known, and subject to reasonable secrecy measures. This

[12] Below i will redogöra strategin i nårmare detalj.

dual approach allows the venture to safeguard both the organizational form of the database through copyright and the underlying data content through trade secret protection.

The database is on mirrored Chalmers servers, the implications are that we don't have control atm. Reference 1.1.5.2 → we need to control.

2.1.3 The brand

Brand protection will become essential upon commercialization. The venture should pre-register key trademarks (e.g., company name, process brand) early to avoid conflicts and secure domain and visual identity. Coordination between trademark and corporate registration will strengthen market credibility and investor confidence.

2.1.3.1 Design right

Design protection in Sweden is governed by the Design Protection Act (1970:485). According to Sections 2 and 3, protection may be granted for the appearance of a product or a part of a product that is new and possesses individual character, meaning that the overall impression it produces on an informed user differs from previously known designs. The protection covers the aesthetic and visual features of the product, such as lines, contours, colours, shape, texture, or ornamentation. But not its technical function, as the latter falls within the domain of patent law.

To obtain protection, a registration application must be filed with the Swedish Patent and Registration Office (PRV), accompanied by clear representations of the design that allow it to be reproduced in the register (Section 10). Once granted, design protection confers the exclusive right to use the design and to prevent others from manufacturing, marketing, or importing identical or confusingly similar designs (Sections 8–9).

Although the venture's current focus is primarily biochemical, potential design rights may arise in later stages, for example, in the visual form of reactor casings, user interfaces, or branded packaging. Even if no registrable design currently exists, such protection could become valuable during commercialization to complement patents and trademarks by safeguarding the venture's visual identity and product aesthetics.

2.1.3.2 Trademark

Trademark protection in Sweden is governed by the Trademarks Act (2010:1877), which provides exclusive rights to distinctive signs capable of distinguishing one undertaking's goods or services from those of another. According to Chapter 1, Sections 1–2, a trademark may consist of words, personal names, logos, letters, numerals, colours, shapes, sounds, or other signs that can be represented clearly in the register. Protection may be obtained either through registration with the Swedish Patent and Registration Office (PRV) or, under Chapter 2, Section 5, by establishing the mark through use in the course of trade, provided it has acquired distinctiveness.

Trademark protection grants the holder an exclusive right to use the sign in commercial activities and to prevent others from using identical or confusingly similar marks for the same or related goods or services (Chapter 1, Section 10). This legal exclusivity serves both to

safeguard the goodwill and reputation associated with the business and to prevent consumer confusion.

From a strategic perspective, trademark planning should begin well before formal registration. Conducting thorough due diligence, including database searches for prior registrations or similar marks, is essential to avoid conflicts with existing rights and potential infringement claims. Early awareness of trademark law enables the venture to develop a coherent brand strategy aligned with its business objectives and market positioning. Establishing distinctiveness and ensuring compliance with trademark regulations from the outset strengthens both the legal and commercial foundation of the brand.

2.2 Soft rights

Soft rights refer to intellectual assets that are not secured through statutory registration but are protected, typically against unauthorized acquisition or disclosure, primarily through confidentiality, technical measures, or contractual agreements.

2.2.1 Knowhow

Knowhow protection is mainly governed by the Act (2018:558) on Trade Secrets. A trade secret is information concerning business or operating conditions (including those of a research institution), which is not generally known or easily accessible, and for which the holder has taken reasonable measures to keep secret**.**

The inherent property of knowhow is that it is typically tied to a person or people with enough experience and knowledge to either use the information or hold the information themselves. In this aspect the human resources are very important and controlling these assets are typically difficult, any employee or founder can leave and take the information with them thus resulting in an immediate loss of valuable soft capital. To counter this the legal structure must be leveraged to create clear and predictable playing field. This can best be done by being aware of the intangible assets and creating company structure that enables control.

The trade secrets act requires that companies have taken enough steps to keep something secret for it to be protected. Thus there needs to be a structure that can document this to prove that it has been upheld but also to itself protect. By limiting access to certain knowledge you can limit risk of rogue employees or breaches from the outside.

This type of work is not a legal passive one time job. It needs active work to maintain the stability of the system and upholding of goals. It’s a living breathing machine that needs love to do its job.

2.2.1.1 Non-controllable assets

This category includes assets that, by law, cannot be protected as trade secrets. According to Section 2 of the Swedish Trade Secrets Act (2018:558), information qualifies as a trade secret only if it (i) concerns business or operational circumstances, (ii) is not generally known or easily accessible to persons within the relevant field, and (iii) the holder has taken reasonable

measures to keep it secret. Consequently, general experience, education, and skills that an employee acquires through ordinary professional development are excluded from protection, as reaffirmed in Section 3, which clarifies that an employee's use of their own general knowledge after employment does not constitute a violation of trade-secret law. These personal competences, including Linnea's research skills and accumulated technical insight, therefore constitute non-controllable assets from a secrecy standpoint.

To supplement statutory protection, companies frequently employ Non-Disclosure Agreements (NDAs). Although not specifically regulated by statute, NDAs are recognized under general contract principles in the Swedish Contracts Act (Avtalslagen, 1915:218) and serve as a contractual extension of the Trade Secrets Act. They define the scope of confidential information, the permitted use, and the duration of confidentiality obligations. When properly drafted, NDAs establish both contractual liability for breach and evidentiary value demonstrating that the employer has taken "reasonable measures" to maintain secrecy, fulfilling one of the core requirements under Section 2(3) of the Trade Secrets Act. Moreover, under Section 7, unauthorized disclosure or exploitation of trade secrets, even by an employee, may result in liability for damages, while Section 8 allows for injunctive relief to prevent continued misuse. NDAs thus serve a dual purpose: ensuring that employees understand their confidentiality obligations and providing the employer with legal standing in potential disputes.

Non-compete clauses constitute another instrument for protecting business interests following the termination of employment. These are governed by general principles of contract law and limited by both statutory and collective-bargaining frameworks. Under Section 36 of the Contracts Act, contractual terms may be set aside or modified if deemed unreasonable, which applies directly to overly broad or restrictive non-compete clauses. In addition, Section 7 of the Employment Protection Act (1982:80) and the 2015 Agreement between Svenskt Näringsliv and PTK establish that non-competes must be proportionate to the legitimate need for protection of trade secrets, typically limited to a maximum of 18 months and accompanied by reasonable financial compensation (normally 60% of base salary). Swedish case law and the Labour Court's praxis (e.g., AD 2015 nr 8) emphasize that non-competes cannot function as a general restriction on professional mobility but must target specific, demonstrable risks of competitive harm.

Taken together, NDAs and non-compete clauses form a contractual complement to statutory trade-secret protection. NDAs document the existence of confidentiality obligations and support the requirement of "reasonable secrecy measures," while non-competes extend post-employment protection where the risk of knowledge transfer is substantial. In the present context, the implementation of both instruments is crucial to maintaining control over confidential research processes and mitigating the risk that key personnel, such as Linnea, inadvertently or deliberately disseminate proprietary know-how acquired during the project.

2.2.1.2 Controllable assets

Controllable assets consist of specific business information and process details, such as proprietary performance parameters, experimental results, and technical specifications related to process efficiency. Under the Swedish Trade Secrets Act (2018:558, Sections 2–3), such information is classified as a trade secret if it (i) concerns business or operational circumstances, (ii) is not generally known or readily accessible to persons who normally handle such information, and (iii) the holder has taken reasonable measures to keep it secret.

Unauthorized acquisition, use, or disclosure of trade secrets may give rise to liability for damages and injunctive relief under Sections 7–8, enforceable through civil proceedings.

In addition to civil remedies, the law also provides for criminal sanctions in cases of severe or deliberate violations. Under Section 10, a person who unlawfully acquires, exploits, or discloses a trade secret with intent or through gross negligence may be convicted of a trade-secret offence (företagshemlighetsbrott). In aggravated cases, where the act involves significant economic harm or professional misuse of entrusted information, the offence is punishable by imprisonment for up to two years, and in particularly serious cases, up to six years. This provision underscores the legislator's intention to treat the protection of trade secrets not only as a private economic interest but as a matter of broader public and commercial integrity, thereby reinforcing the preventive and deterrent effect of maintaining robust internal secrecy procedures.

In practice, compliance with the "reasonable measures" requirement demands a systematic internal framework for secrecy management. This includes clear document labelling, controlled environments for data storage and handling, and the implementation of a strict need-to-know policy limiting access to authorized personnel only. All confidential information should be handled within a structured protocol supported by Non-Disclosure Agreements (NDAs) and documented access control, thereby creating traceability and evidentiary support for future enforcement.

Although it is not necessary to proactively assess whether each individual item of information formally qualifies as a trade secret under the statutory definition, the venture should adopt a comprehensive protection strategy whereby all potentially sensitive materials are treated as confidential by default. Such a precautionary approach ensures compliance with the Trade Secrets Act while also reducing the risk of inadvertent disclosure or legal uncertainty regarding the scope of protection.

3. Risks and opportunities

3.1 Linnea

Many of the intellectual property assets central to the development of our initiative originate from Linnea's previous work. Consequently, it is essential to identify which other legal subjects such as former employers, institutions, or collaborators could potentially assert rights over these assets. Understanding how Linnea acquired these rights, and whether her current use may intersect with existing contractual or statutory obligations, is critical to safeguarding both her and the venture's legal standing. This requires a comprehensive examination under the Employee Inventions Act (1949:345), the Copyright Act, and the Trade Secrets Act to clarify ownership, assess risks of competing claims, and implement protective measures that ensure secure and uncontested control over the relevant IP.

3.1.1 Carbios patent

Linnea's prior employment at Carbios raises several potential legal concerns. Carbios not only holds proprietary rights to Patent 1, but may also have residual rights to works and results created during Linnea's employment. According to the Employee Inventions Act (1949:345) the employer has a primary right to an invention made by an employee (§ 3) if it arises (i) as a result of the employee's contractual duties, or (ii) through use of the employer's resources or confidential information. The employer must notify the employee if it intends to claim the invention (§ 4). Although the parties may deviate by agreement, such modification requires clear contractual evidence. Linnea's alleged verbal agreement with a Carbios representative, granting her continued academic use of the technology, may be valid under the Swedish Contracts Act, but presents evidentiary risks. It must therefore be examined whether the representative possessed actual or apparent authority (AvtL §§ 10–11), or whether Linnea had reasonable cause to rely on that authority.

There is room to argue that Linnea through this agreement has shared ownership over the commercial use of the patented technology. However this is very difficult to prove as the agreement is purely verbal. Shared ownership would also mean that both parties have to agree to any transfers of rights. This means that we would need Carbios blessing anyway if we need to use the patent for commercial use.

Assuming, for the sake of argument, that Linnea is a co-owner (delägare) of the Carbios patent, either through contribution to the inventive step or by contractual allocation, the legal implications are governed primarily by Chapter 10 of the Swedish Patent Act (2024:945), which regulates joint ownership of patents.

Under Chapter 10 Section 1 PL, where a patent is jointly owned, each co-owner is entitled to use the invention personally within the scope of the patent without the consent of the other co-owners. However, any act of commercial exploitation that involves granting licences to third parties, assigning ownership shares, or initiating enforcement actions requires the consent of all co-owners, unless otherwise agreed. This reflects the general principle of co-ownership under Swedish property law, where unilateral actions that alter or encumber the right vis-à-vis third parties are prohibited without the others' approval (jfr. samäganderättslagen (1904:48 s.1) § 2).

If Linnea holds a joint ownership share, she may, in principle, assign her undivided share to another party (here, the partnership or the other partners) under Patent Act Ch. 10 Section 2, but this transfer would merely substitute the new holder in her place. It does not expand the rights associated with that share. The acquirer (the partnership) would step into Linnea's position and remain bound by the same restrictions as any co-owner: it could use the invention itself but could not license or sell it without consent from the remaining co-owners (i.e., Carbios).

In practical terms, even if the partnership received Linnea's co-ownership share, it would not gain the right to commercially exploit the technology independently, unless Carbios either (i) expressly consents, or (ii) a co-ownership agreement exists that grants each owner freedom to license or commercialize individually. Such agreements are common in collaborative R&D but must be in written form to be enforceable.

The co-ownership structure introduces several legal limitations relevant to innovation governance: Without mutual consent, the partnership cannot license, manufacture, or sell products embodying the invention (PL 10:1); Linnea may only transfer her share, not the entire patent right, meaning Carbios retains veto power over commercial activities (PL 10:2).; Unauthorized exploitation by one co-owner beyond personal use may constitute patent infringement under PL Ch. 9 § 1, potentially resulting in injunctions and damages; Enforcement actions (e.g., infringement suits) must be brought jointly by all co-owners (PL 10:3).

Thus, even if Linnea were deemed a co-owner, her joining the non-registered partnership does not automatically grant the venture unrestricted commercialization rights. The partnership could use the invention internally for research or proof-of-concept work, but market-oriented use, licensing, or scaling would still require Carbios' consent. The absence of a written co-

ownership or licence agreement leaves the partnership in a legally uncertain position, effectively unable to exploit the technology without risking infringement.

In conclusion, even under the hypothetical assumption that Linnea is a co-owner of the patent, her joining the partnership would not automatically empower the partnership to engage in commercial exploitation. The rights of a co-owner are limited to personal use unless otherwise agreed by all co-owners. Any transfer of Linnea's share would merely replicate these constraints within the partnership.

The implication of this conclusion is that, in markets where Carbios maintains patent protection or commercial control, the venture will ultimately be required to negotiate a formal licence or authorization to lawfully exploit the underlying technology.

3.1.2 PlastiPredict

Regarding PlastiPredict, potential rights of Chalmers University must also be assessed. Under the Copyright Act (1960:729), Ch. 1 § 1 para. 4 classifies computer programs as literary works protected by copyright, while Ch. 1 § 7 provides that the economic rights to a work created by an employee within the scope of employment may accrue to the employer unless otherwise agreed. Determining ownership therefore requires an examination of Chalmers' internal IP policy and employment contracts to assess whether institutional policy can supplement or override individual agreements. Should Linnea have coordinated or supervised external developers, it must be clarified whether she acted as an employer (thereby acquiring rights under Ch. 1 § 7 URL) or merely as a collaborating researcher.

To determine whether Linnea has acted as an employer in relation to the development of PlastiPredict, it is necessary to assess the nature of her relationship with the individuals who contributed to the software's creation. Swedish law does not contain a single codified definition of "employer" for the purposes of intellectual property ownership; rather, the concept is assessed functionally, based on who exercises control, assumes responsibility, and directs the work. The analysis is primarily guided by the Copyright Act (1960:729), Chapter 1 Section 7, which provides that the economic rights to a work created by an employee may accrue to the employer when the work is produced within the scope of employment. Additional guidance can be found in the Employment Protection Act (1982:80, Section 1), defining employment relationships, and in the Contracts Act (1915:218, Sections 10–11) concerning contractual authority and binding commitments. Swedish Labour Court case law (e.g., AD 1996 nr 138; AD 2005 nr 49) further clarifies that an employment relationship is

characterised by subordination, meaning that one party performs work under another's direction and control.

The decisive factors for determining employer status include: (i) whether Linnea entered into a contractual relationship with the developers in her own name or on behalf of Chalmers; (ii) the degree of control and supervision she exercised over their work, including authority to direct, modify, or approve outputs; (iii) who bore the financial responsibility for compensation, tools, and resources; (iv) whether the developers were integrated into Chalmers' organisational structure or operated directly under Linnea's direction; and (v) whether Linnea assumed risk or liability for the work's outcome. The totality of these circumstances determines whether an employer–employee relationship existed in a legal sense.

If the evidence shows that Linnea directed the work, financed the development, and assumed practical responsibility for its completion, she would likely be regarded as an employer in the meaning of Chapter 1 Section 7 of the Copyright Act, acquiring the economic rights to the resulting software. In that case, Linnea would also assume the corresponding obligations and liabilities associated with employer status under the Tort Liability Act (1972:207, Chapter 3 Section 1). Conversely, if the development occurred within Chalmers' organisational and financial framework, or if the university provided resources, supervision, or payment, the rights would likely accrue to Chalmers University of Technology or to the individual developers depending on their contractual positions.

To reach a legally sound conclusion, the venture should: (1) obtain all relevant employment or consultancy agreements connected to PlastiPredict; (2) verify who financed the work and provided technical infrastructure; (3) establish whether the project was carried out under Chalmers' institutional framework or Linnea's independent initiative; and (4) review correspondence and project documentation that evidences Linnea's role and authority. Only by clarifying these circumstances can the project determine whether Linnea acted as an employer and, consequently, who holds the initial economic rights to the software.

3.1.3 Other relevant obligations

Linnea's post-employment obligations must also be evaluated. Confidentiality and non-compete clauses are primarily governed by contract law and subject to reasonableness under § 36 Avtalslagen. The 2015 Agreement between Svenskt Näringsliv and PTK—which has strong normative influence in Swedish labour law—permits non-competes only when justified by protection of trade secrets, limits them generally to 18 months, and requires compensation

of at least 60 % of fixed salary during the restricted period. Overly broad clauses may be invalidated under Avtalslagen § 36 or LAS § 7, which protects employees from unfair contractual restrictions. Any breach of confidentiality may give rise to civil liability for damages under FHL § 7, injunctive relief under § 8, and, in aggravated circumstances, criminal liability under § 10 FHL, where intentional or grossly negligent misuse of trade secrets may lead to imprisonment of up to two years, or six years for particularly serious cases.

It is further unclear whether any materials transferred from Carbios could constitute trade secrets. Under the Trade Secrets Act (2018:558). § 3 specifies that an employee's use of their general skills and experience after employment does not constitute unlawful use. Consequently, a detailed factual assessment is required to determine whether PlastiPredict or associated datasets incorporate any confidential information originating from Carbios. This involves technical comparison and verification against the statutory secrecy criteria in §§ 2–3 FHL.

From the perspective of the current venture, it is essential to clarify Linnea's legal capacity to assign or license rights to the project. If her rights can be substantiated, they should be transferred through a written employment or assignment agreement ensuring that all IP generated henceforth vests in the venture. Should the project remain organised as a non-registered partnership, the implications of the Partnerships Act must also be considered, as such partnerships lack separate legal personality. This entails that rights and obligations fall on the individual partners, who are jointly and severally liable for commitments entered into on behalf of the venture. To mitigate risk, contractual frameworks must clearly delineate ownership of intellectual assets and allocate liability among partners. As a result of the non-regsitered partnership being so weak, there is substantial argument to be made that the organisation should become a limited liability company as soon as possible.

4. Summary

This analysis has examined the legal structure surrounding the initiative's resource base, focusing on the identification, classification, and protection of the intellectual property assets that underpin its technological and commercial potential. The findings demonstrate that the initiative's long-term viability depends on establishing clear ownership and control over assets derived from Linnea's prior work and the Carbios-developed patent foundation. Through the application of Swedish intellectual property legislation the analysis clarifies both the scope of legal protection and the risks of overlapping or competing claims.

The examination of hard rights revealed that Carbios' European Patent constitutes the primary dependency in the venture's resource base. As the patent's legal protection is territorially limited to jurisdictions where it has been validated, any commercial use within Sweden requires no such explicit authorization or licensing as the patent does not cover the geografical jurisdiction of Sweden. However, expanding outwards to foreign markets, and initiating trades with other companies that operates within these jurisdictions, it requires clear and predictable outlines that are only reachable through agreement with Carbios. This dependency underscores the importance of conducting a freedom-to-operate assessment and engaging in structured licensing negotiations to secure lawful access to the technology while maintaining strategic flexibility. The analysis of soft rights, particularly regarding the PlastiPredict software, database, and know-how, highlights the necessity of combining copyright protection with trade secret governance to secure the proprietary elements of the initiative's data-driven innovation.

Linnea's dual background as a former employee of Carbios and as a current researcher at Chalmers University of Technology introduces complex intersections of employment, contract, and trade secret law. Under the Employee Inventions Act, Carbios may retain residual rights to inventions developed during employment, whereas Chalmers' position under the Copyright Act and institutional IP policy may influence ownership of later works. The Trade Secrets Act further governs the boundary between individual expertise and protectable business information, clarifying that general skills and experience cannot be restricted, while proprietary data and software can. These intertwined legal frameworks illustrate the critical importance of mapping the chain of title for each IP asset and ensuring that written agreements, NDAs, and assignment clauses are executed to confirm ownership and avoid disputes.

The risk assessment identified several legal vulnerabilities: (i) uncertainty regarding the origin and ownership of key IP assets; (ii) potential exposure to claims of misappropriation or

infringement from Carbios or Chalmers; and (iii) insufficient formalization of secrecy and governance routines. The corresponding mitigation measures include implementing documented IP-transfer agreements, formal employment or consultancy contracts with contributors, and a “zero-trust” information framework that limits access to sensitive material on a need-to-know basis. These measures satisfy the “reasonable secrecy measures” requirement under the Trade Secrets Act and enhance the evidentiary foundation for enforcement.

The strategic framework developed in this appendix integrates legal compliance with innovation management. By combining statutory protection with contractual instruments such as patents, copyrights, NDAs, and non-compete clauses, the venture can build a defensible and transparent IP portfolio that facilitates collaboration with industrial partners while preserving internal control. The legal governance structures proposed here not only minimize legal exposure but also strengthen the initiative’s position in future negotiations, investment processes, and commercialization efforts.

In conclusion, the analysis demonstrates that effective legal protection is inseparable from the initiative’s innovation strategy. The systematic use of IP law, through ownership clarification, confidentiality management, and proactive due diligence, converts legal uncertainty into strategic capability. The venture’s success will therefore depend on its continued ability to integrate legal foresight with technical and organizational innovation, ensuring that its intellectual assets are not only protected but also leveraged as a core driver of sustainable value creation.

5. Bibliography of References

Patentlagen (2024:945);

Lag (1960:729) om upphovsrätt till litterära och konstnärliga verk;

Lag (2018:558) om företagshemligheter;

Varumärkeslag (2010:1877);

Mönsterskyddslag (1970:485);

Avtalslagen (1915:218);

Lagen (1982:80) om anställningsskydd;

Lag (1949:345) om rätten till arbetstagares uppfinningar;