IP GUIDE FOR SMART PROTEINS

Understanding Intellectual Property: A practical guide for smart protein innovators

gfi India

K&S partners
Intellectual Property Attorneys

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Toolkit

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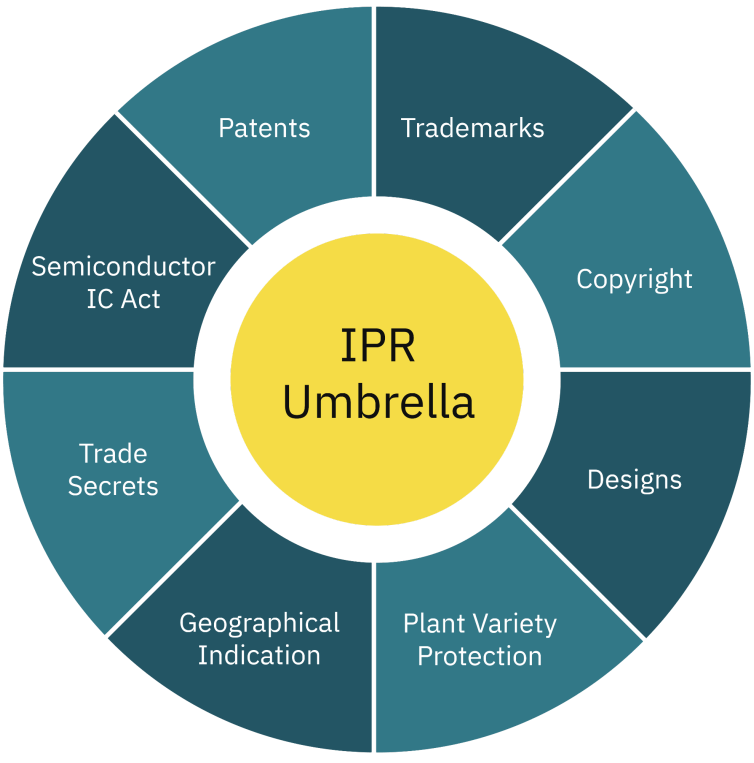
As India begins to shape its position in the global smart protein landscape—through innovations in plant-based meat, cultivated meat, and precision- and biomass-fermented inputs—intellectual property (IP) is quietly becoming a critical asset. For startups and research-driven companies in this sector, IP is not just a legal formality designed to protect inventions. Intellectual property rights (IPRs) can meaningfully create long-term value, building investor confidence, and gaining a competitive edge in a rapidly evolving market. Whether you're developing a novel fermentation strain, engineering better textures in plant-based foods, or scaling up cost-effective bioprocesses, your ideas and know-how can—and should—be protected.

Armed with the basic understanding of how IP laws work, innovators can start thinking strategically about IP early on. With foundational knowledge of what counts as protectable innovation and how patents, trade secrets, trademarks, and designs fit into your product and business roadmap, you can leverage IP as a tool for growth. This resource offers a practical guide to help smart protein entrepreneurs in India navigate the IP landscape.

What is IP, and why does it matter?

There are several types of recognised IPRs:



Intellectual Property (IP) refers to creations of the human mind—whether scientific, technological, literary, or artistic—that can be owned like physical property. In the smart protein sector, this could include a new plant-based formulation, a proprietary cultivated meat cell line, a fermentation process, or packaging and branding elements. While intangible, IP grants legal rights similar to those of tangible property, allowing companies to control how others use their innovations. These rights are territorial—valid only in the countries where protection is granted—and time-bound. For example, a patent lasts 20 years, and a registered design is protected for up to 15 years.

Different countries have their own IP laws but also follow global treaties that help standardise how IP is filed and protected across borders.

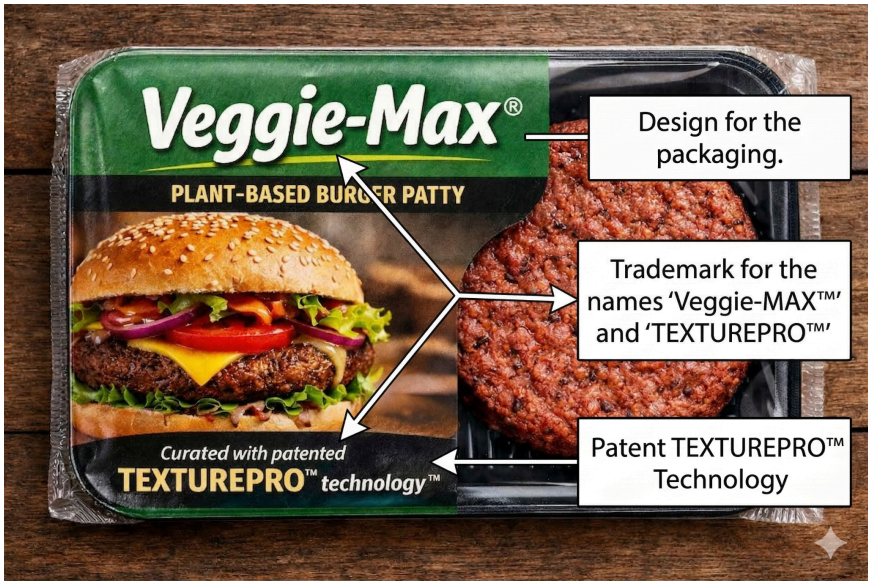
For companies in the smart protein sector, IP is not just about protection—it's about strategy. IP needs to be developed, protected, and utilised intelligently to unlock its full value. It helps companies enter partnerships, avoid copycats, and stand out in a crowded market. Whether you're an early-stage startup or a scaling company, understanding IP is a first step towards turning innovation into lasting impact.

Overview of IP types

IP type	What it protects	Examples
Patent	A new product or process involving an inventive step that is capable of industrial application (the technical idea itself).	i. Novel culture media formulation for cultivated meat production ii. New ingredients in the composition of plant-based meat iii. Unique fermentation process optimisation systems for smart protein manufacturing
Trademark	Any mark (word, logo, shape, colour, sound, jingle, or smell) used as a source identifier to distinguish goods or services.	A brand name or a distinctive logo for a plant-based patty.
Trade Secret	Confidential business information that confers economic benefit due to its secrecy and is subject to reasonable efforts to maintain that secrecy.	i. Cell-line derivation protocols ii. Off-flavour masking strategies iii. Dynamic nutrient feed timing and profiles in fermentation

Copyright	The original expression of an idea (literary, dramatic, musical, or artistic work), not the idea itself.	i. Website content ii. Product manuals iii. Packaging artwork iv. Marketing videos or jingles
Industrial Design	The ornamental or aesthetic features of shape, configuration, pattern, or composition of lines or colours applied to an article.	The unique leaf-like shape and texture of an edible, biodegradable serving tray for cultivated meat.

Several IPRs may be required to protect a single product; thus, basic knowledge of all key IPRs is essential. A product, such as a plant-based patty, may incorporate several IPRs, including design, copyright, trademark, and patent rights.



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What are patents?

A patent is a statutory privilege granted by the government to an inventor for a **fixed and limited period of years** to exclude others from making, using, offering for sale, selling or importing a product or a process based on the patented invention without the inventor's prior permission. It is granted for a new product or process that involves an inventive step and is capable of industrial application.

A patent is valid for 20 years from the filing date of the patent application, provided the required annual maintenance fees are paid on time.

This exclusive right is granted in exchange for complete disclosure of the invention to the public by providing exhaustive and accurate details of the invention in the patent specification. Moreover, this exclusive right of exploitation, as well as the enforcement of rights granted under a patent, is a **territorial right** and applies only in the country that issued the patent.

Benefits of patenting, especially for startups

Patents are a long-established means of encouraging innovation because they grant the owner of an invention an exclusive right to prevent others from making, using, selling, offering for sale, or importing it without their permission for a fixed period. Such exclusivity of the rights can be crucial for startups to prosper in a challenging and dynamic business environment.

The key benefits of patenting for start-ups are:

What is a patentable invention?

Under the Indian Patents Act, 1970, an "invention" is defined as a new product or process involving an inventive step and capable of industrial application. To qualify for patent protection in India, your smart protein innovation must meet the following three essential criteria:

1. Novelty: The invention must be *new*—it should not have been disclosed in any public domain (research papers, conferences, websites, etc.) anywhere in the world before the date of filing.
2. Inventive step (non-obviousness): The invention should not be obvious to a person skilled in the art/science—in this case, someone familiar with biotechnology, food science, or related disciplines. It must demonstrate a technical advancement or show economic significance. For instance, improving the cost efficiency of plant protein extraction using a unique enzyme combination could be considered “inventive” if it is not an obvious step for professionals in the field.
3. Industrial applicability (utility): The invention must be capable of being made or used in an industry. It must have real-world utility, such as being implemented in the production of animal-free meat, seafood, eggs, and dairy. If the invention can be practically applied at scale in food production, processing, or packaging, it is considered industrially applicable.

   Examples of patentable innovations in the domain of smart proteins:

- Cultivated meat:
  - Cell-line derivation methods like immortalisation techniques.
  - Novel scaffold biomaterials, such as edible plant-based or mycelia-derived scaffolds.
  - Bioreactor designs and scale-up processes.
  - Cell culture media formulations containing novel serum-free or animal-origin-free alternatives.
- Plant-based proteins:
  - Development of crop breeds with improved quality and functionality
  - Unique processing and texturisation techniques, like cold extrusion, to retain fibrous texture.
  - Novel ingredients for better mouthfeel, emulsification, or flavour-masking technologies.
- Fermentation-derived proteins:
  - Engineered microbes, custom-designed gene constructs for enhanced microbial growth potential, nutritional characteristics, or low-cost feedstock preferences. Cost-effective production through improved upstream/downstream processing parameters is also a patentable finding.

What are trademarks?

A “trademark” is defined as any mark that can be represented graphically and helps distinguish the goods and services of one entity from those of others and may include the shape of goods, packaging, and combination of colours, etc. Simply put, a trademark is anything that acts as a source identifier for

goods or services.

Trademarks can range from a word mark, logo, device, label, or hologram to a tagline, smell, taste, and shape of an article, packaging, a combination of colours, or even a single colour. Even a sound or a jingle can be registered as a trademark when graphically represented in the form of musical notes.

Generally speaking, trademarks in India can be classified under the following broad categories:

Product marks

Marks used to identify the goods to which they are applied.

Service marks

Marks used to identify the services to which they are applied.

Certification marks

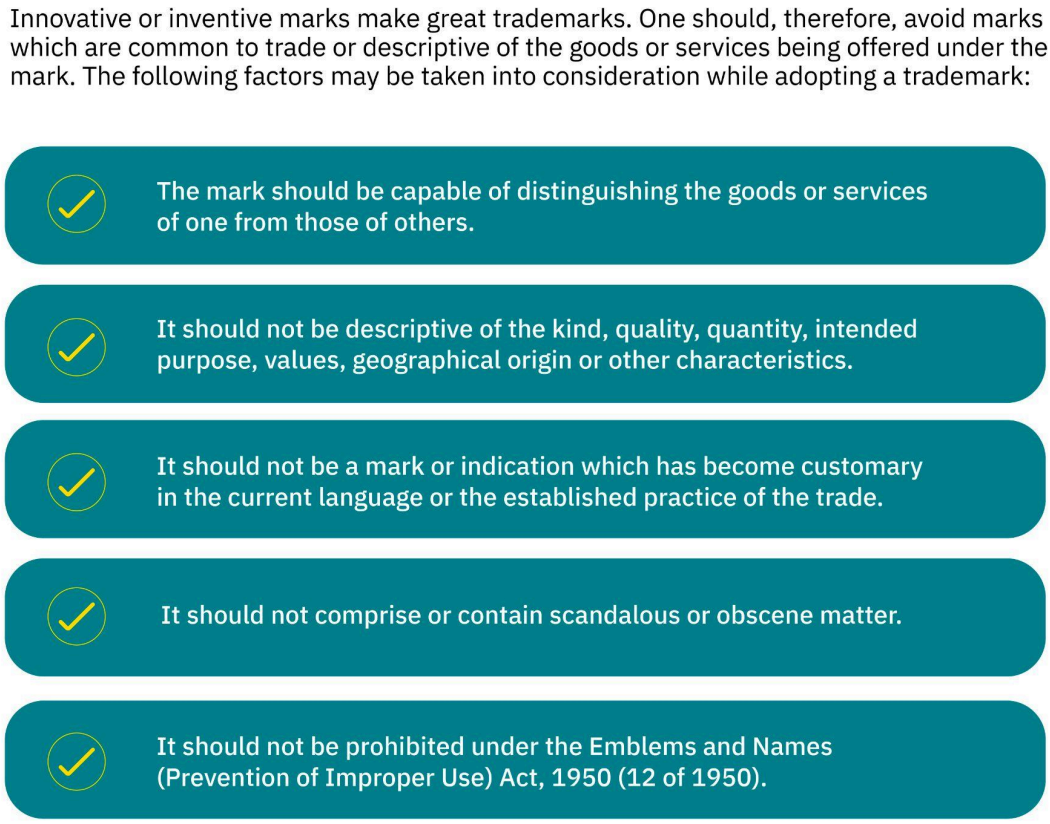
Marks used to indicate that goods or services meet specified standards set by the proprietor of the mark. These standards may relate to origin, material, method of manufacture, quality, accuracy, performance, or other defined characteristics.
Examples: WOOLMARK, ISI, AGMARK, etc.

Collective marks

Marks used by members of an association (other than a partnership under the Indian Partnership Act, 1932) to distinguish their goods or services from those of non-members.

Trademarks in India are valid for 10 years from the date of application and must be renewed every 10 years thereafter. The official renewal fee is ₹9,000 per class for e-filing (online) or ₹10,000 for physical filing. Renewal applications (Form TM-R) can be filed up to 1 year before expiration.

Factors to be considered when adopting a trademark:



Brand protection strategies

Branding in the smart protein sector is not just about product recognition but also about building long-term trust, ensuring regulatory compliance, and achieving market differentiation. Trademark protection is crucial for safeguarding brand identity and maintaining its commercial value. Key strategies include:

1. Early trademark registration: Register in key target jurisdictions, including India, the EU, and the U.S.
2. International filings under the Madrid Protocol: Using the Madrid System enables cost-effective multi-country trademark filings.
3. Class selection and coverage: Carefully choose Nice Classification classes.
4. Defensive filings and brand variants: Companies can file for defensive marks, including phonetic variations, acronyms, and potential sub-brands.
5. Watch services and enforcement: A proactive trademark monitoring system helps detect infringers.

Trademark protection helps build positive consumer perception, investor confidence, and cross-border scalability.

What is a trade secret?

Under Indian law, there is no specific statute governing trade secrets; they are protected by contract law, equity, and common-law principles. Trade secrets typically include confidential business information, which:

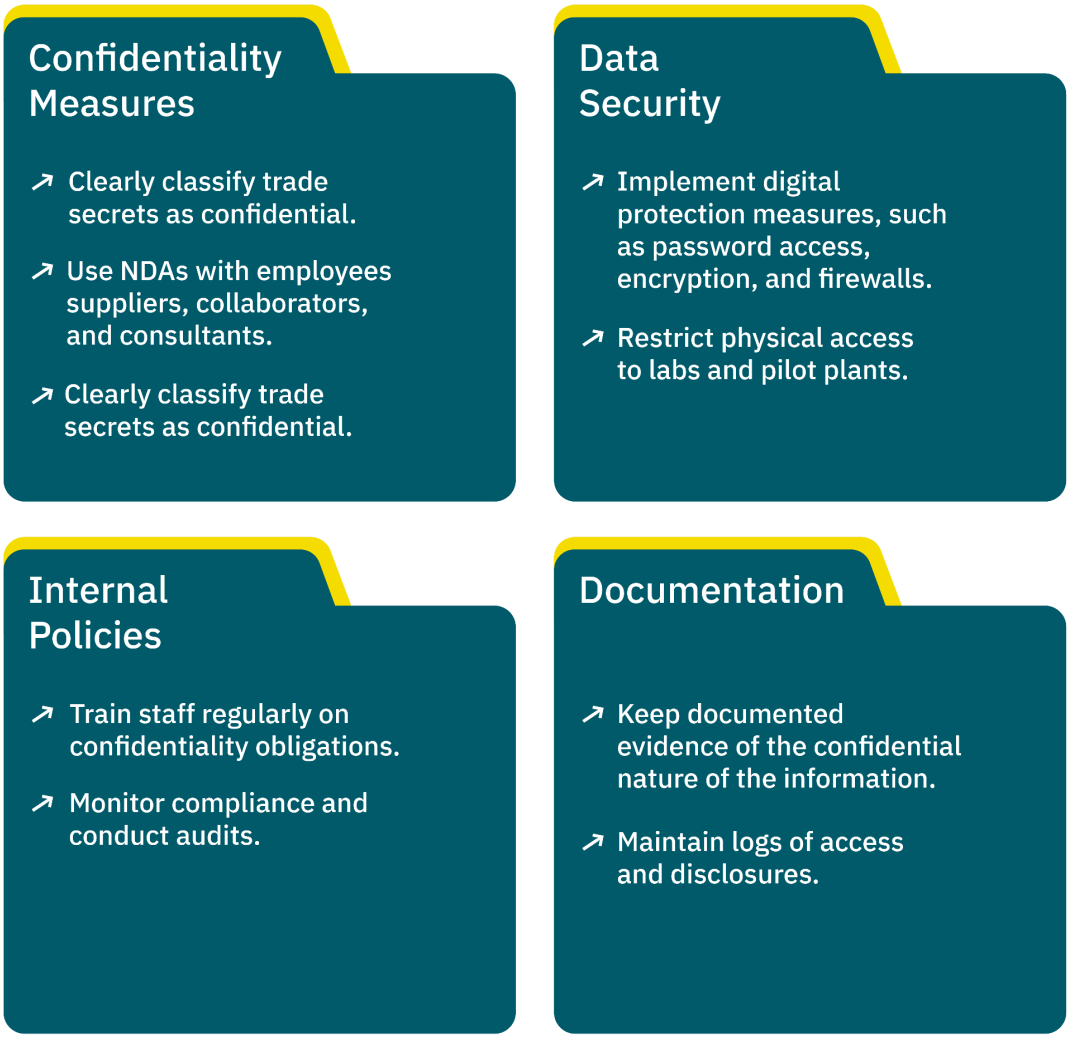
- are not generally known to the public
- confer economic benefit to its holder because they are not publicly known
- are subject to reasonable efforts to maintain their secrecy

Examples in the smart protein space could include:

- Fermentation media formulation (e.g., carbon/nitrogen source combinations) and feeding strategy to achieve maximum yield.
- Proprietary cell-line derivation protocols or oxygenation strategy for dense cell cultures in bioreactors in the scale-up of cultivated meat.
- Precise composition/ratios of ingredient blends or extrusion process parameters in plant-based meat.

What are the trade secret protection requirements in India?

To qualify for protection, a smart protein company must demonstrate the following:



Courts in India generally enforce trade secret protection under the principles of equity and breach of confidence, particularly when the holder has taken proper steps to maintain secrecy.

In India, smart protein companies must proactively structure internal protocols to qualify for and enforce trade secret protection. Given the high stakes of first-mover advantage and the difficulty in reverse-engineering many food technology processes, trade secrets offer a viable and flexible protection mechanism, particularly in areas where patenting is impractical or disclosure is commercially risky. Companies can adopt a layered approach combining contracts, digital security, and internal governance to safeguard their innovations.

In the rapidly evolving smart protein sector, trade secrets are crucial for maintaining a competitive edge. Given the nascent nature of the industry and the difficulty in patenting certain processes or formulations due to issues of inventiveness, disclosure risks, or long gestation times, many companies opt to protect their proprietary knowledge through trade secret law.

What is a copyright?

Copyright law in India is governed by the Indian Copyright Act, 1957, amended over the years, with the latest significant amendments taking effect on June 21, 2012. In the smart protein sector, copyright protects the original expression of ideas, not the idea itself. It is especially relevant for creative assets such as marketing campaigns, product packaging designs, website content, recipe books, product manuals, and audiovisual material used to promote plant-based, cultivated, or fermented protein innovations.

For example, if a smart protein startup creates a visually distinctive label design for a plant-based keema product or writes a compelling sustainability and animal-free protein story for its website, then they are considered original literary or artistic works. Such works are automatically protected under copyright law the moment they are created, although formal registration can strengthen legal enforcement.

Copyrights ensure that innovators retain control over how their creative assets are used, preventing unauthorised copying, reproduction, or distribution. This is particularly important in a sector such as smart protein, where brand identity and storytelling play a key role in consumer adoption.

Under the Indian Copyright Act, 1957, copyright protection extends to original literary, dramatic, musical, and artistic works, as well as cinematograph films, sound recordings, and specific rights such as broadcast reproduction and performers' rights. In the smart protein sector, several forms of creative content developed by companies, researchers, and marketers may fall into these categories and therefore be eligible for copyright protection.

What are industrial designs?

Design rights protect the ornamental features of shape, configuration, pattern or composition of lines or colours (in two dimensions or three dimensions or both), applied to an article which appeals to and is judged solely by the eye. Design is applied to an article (artificial or partly artificial and partly natural) and includes any part of an article capable of being made and sold separately. It excludes any mode or principle of construction or anything which is, in substance, a mere mechanical device, any trademark, property mark, or artistic work.

A registered design is protected for an initial term of 10 years from the date of filing or the priority date and is extendable for another 5 years. Design rights, like patents, are territorial.

For example, a smart protein startup in India develops an extrusion machine to structure plant proteins whose design or outer visual appearance (shape, panels, interface elements, or colour scheme) is distinct. While technical innovations in the machine would be protected by a patent, the purely aesthetic aspect (the shell, external contours, and user-control panel layout) can be protected as a design.

This matters because design rights complement patents: where the "how it works" is protected by a patent, the "how it looks" is protected by a design.

Basic requirements for obtaining a design registration:

- It should be applied to an article of manufacture or a part that can be made and sold separately.
- It should be new/original.
- It should not be prohibited for registration under the provisions of the Design Act, 2000.
- It should not violate public order or morality.
- The design should not compromise the security of India.

Prohibitions on registration of a design

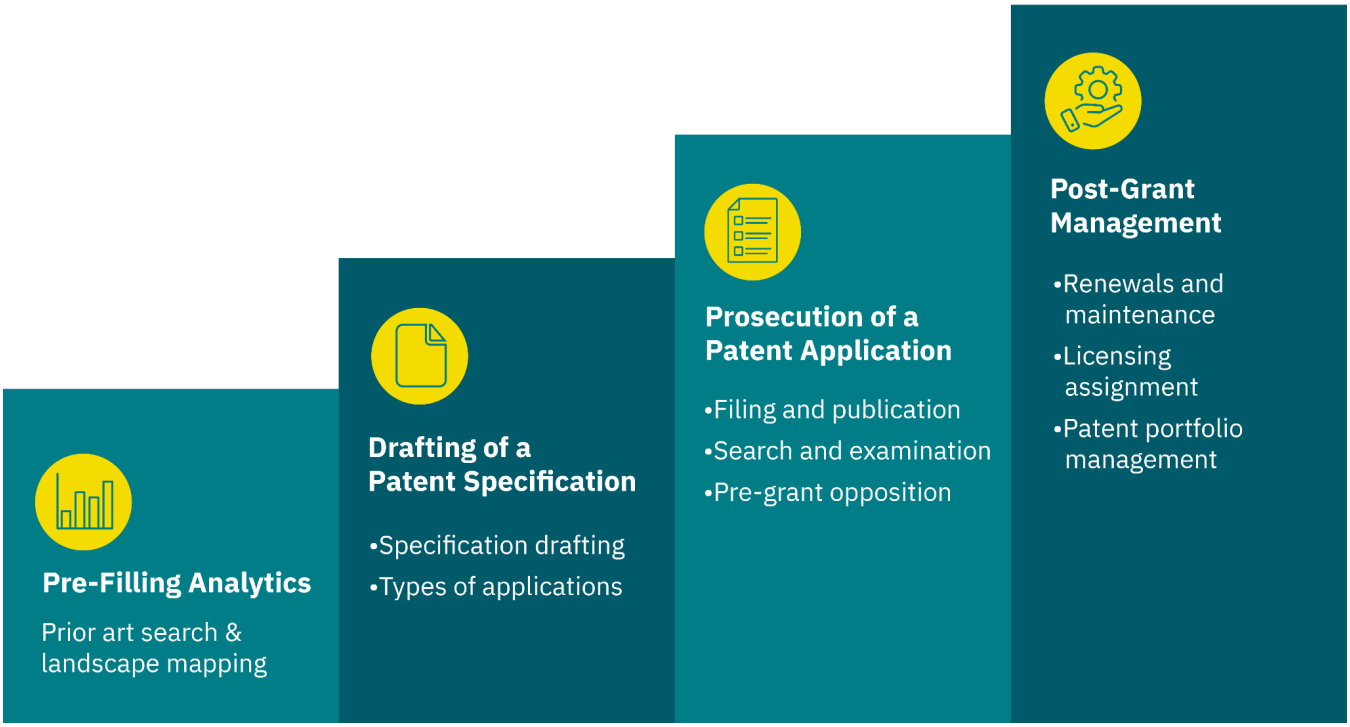
A design which –

a. is not new or original; or
b. has been disclosed to the public anywhere in India or in any other country by publication in tangible form or by use or in any other way before the filing date, or where applicable, the priority date of the application for registration; or
c. is not significantly distinguishable from known designs or a combination of known designs; or
d. comprises or contains scandalous or obscene matter

– is prohibited under Indian law for design registration.

Patent life cycle in India

The patent life cycle is a strategic continuum that ensures the protection, enforcement, and commercialisation of IP throughout its 20-year term. Broadly, this life cycle can be divided into four interconnected stages:



Challenges in patenting biological innovations in India

Innovators in India's smart protein industry face significant challenges in securing patents in India due to the exclusions under Section 3 of the Indian Patents Act. These hurdles can affect everything from microbial strain innovation to cultivation protocols and food formulations.

Beyond these statutory exclusions, two persistent procedural and regulatory challenges deserve greater attention.

1. Any patent application involving Indian biological resources—whether microbial strains, indigenous plant varieties, or enzymes sourced from local soil—requires prior approval from the National Biodiversity Authority (NBA) under the Biological Diversity Act, 2002. The ambiguity around what constitutes "Indian biological material" and the time-consuming approval process often lead to patent-grant delays. Even when the material is cultured in a lab or commercially sourced, patent examiners routinely raise objections unless NBA approval is provided, creating a compliance burden for even minimal-resource inventions.
2. Inventions involving novel microbial strains or genetically modified organisms must comply with the Budapest Treaty's international deposit requirements. While India recognises Budapest Treaty depositories, there is limited awareness among startups and academic inventors about the need to deposit biological material at the time of filing or at least before publication. Non-compliance or late submission can lead to formal objections, loss of priority, or, in the worst cases, patent refusal. Additionally, for cultivated meat or precision fermentation inventions, disclosing sufficient detail about the cell lines, plasmid constructs, or fermentation chassis becomes technically and legally complex.

Similarly, cultivated meat inventions involving immortalised animal cell lines, scaffolds, and serum-free media may also face patentability hurdles. Even technically sound inventions may be challenged on moral or ethical grounds, delaying prosecution or triggering post-grant opposition.

Patent filing strategies:

1. Create a patent portfolio on purpose, letting IP strategy speak to the business strategy
2. File early and secure a priority date with a provisional application, even if the invention isn't fully developed. It helps block competitors and gives time (12 months) to finalise technical details.
3. Protect the core and build a patent family (Layered Protection)
4. Identify thecore differentiator (e.g., novel strain, process, or composition) and focus protection there.
5. Avoid over-patenting peripheral features, as it increases cost without proportional value.

6. Think globally: use the Patent Cooperation Treaty (PCT) route to defer international filing costs and evaluate commercial potential.
7. Avoid public disclosure before filing—public pitches, conference talks, or academic posters can destroy novelty.
8. Always file before sharing technical details externally, especially in grant or investor decks.
9. Draft broad claims supported by narrower fallbacks.
10. Ensure compliance with biological material disclosure and NBA
11. Monitor the patent landscape by setting up watch alerts to track competing applications in the relevant technology domain.
12. Leverage IP portfolio to attract investment.
13. Consider IP costs as capital investments, not operational costs.

Licensing, tech transfer and collaborations

In the innovation economy, especially in emerging sectors like smart protein and synthetic biology, IP doesn't always need to be monetised through in-house commercialisation. Strategic licensing, technology transfer, and research collaborations enable faster scale, global reach, and shared risk, all while preserving intellectual property value. Below is a detailed breakdown of key concepts and practices in these domains.

Licensing models and key clauses

Licensing allows the IP owner (licensor) to grant another party (licensee) the right to use, manufacture, or sell a patented invention or know-how in return for compensation—typically a royalty, a lump sum, or a mix of both.

Common licensing models:

- Exclusive licence: A legal arrangement in which the licensor grants the licensee the sole right to use, make, sell, or commercialise the intellectual property, excluding all others—including the licensor—from using the IP within the defined scope (territory, field, or duration).
- Non-exclusive licence: Licensee is permitted to use the licensed intellectual property but does not preclude the licensor from granting the same rights to others or using it itself.
- Field-of-use licence: Licensee gets rights restricted to specific applications (e.g., use of a protein scaffold for cultivated poultry but not the meat).
- Territorial licence: Rights are restricted to a specific geographic area (e.g., India only, ASEAN region).

Points to consider in IP licensing agreements:

- Grant of rights: Clear definition of what IP is licensed, its scope, and usage limitations.
- Royalty terms: Different terms including upfront, running royalties, milestone-based payments, or hybrid models.
- Improvement rights: Address ownership and rights over future enhancements or derivatives.
- Sublicensing: Whether the licensee can grant further licences.
- Duration and termination: Conditions under which the licence ends, including breach or insolvency.
- Confidentiality and IP protection: Obligations to protect trade secrets and avoid misuse.
- Warranties and indemnities: Disclaimers and protections for both parties, especially in regulated sectors like food and biotech.

Good practices for collaborative research

Whether between companies, universities, or international labs, collaborative research thrives when IP rights are structured upfront and transparently.

Best practices:

1. Confidentiality agreements: Non-Disclosure Agreements should always precede data sharing or exploratory meetings.
2. Joint R&D agreements: Define deliverables, milestones, and contribution expectations.
3. Invention disclosure protocols: Clearly outline how new IP will be identified, recorded, and evaluated.
4. Ownership and exploitation rights: Clarify single vs. joint ownership and commercial use rights from the outset.
5. Publication rights: Academics often seek to publish; set mutual review timelines to protect patentability.
6. Dispute resolution: Include mediation or arbitration clauses to manage breakdowns in IP sharing or commercialisation.

A well-defined IP strategy in licensing, tech transfer, and collaborations can unlock scale, speed, and credibility, especially for resource-constrained startups. At the same time, clear contractual structures and foresight into ownership, improvements, and commercialisation terms are essential to protect the long-term value of innovation.

Global IP strategy

For startup founders aiming to expand beyond their home markets, developing a robust global intellectual property (IP) strategy is essential. It secures innovation across borders as well as enhances valuation, attracts international investors and collaborators, and supports future partnerships or licensing arrangements. Crafting a global IP strategy requires careful consideration of when to seek protection outside your domestic jurisdiction, how to file internationally, which countries to choose for protection, and what differences exist in patent laws across key markets such as India, the U.S., Europe, Japan, Korea, and China.

When and how to go international

Startups should consider filing their IP internationally when they foresee commercial interest, partnerships, manufacturing, or potential competition in foreign markets. The right time to file abroad typically aligns with specific triggers, such as establishing product-market fit in another country, securing investor interest from a particular geography, starting manufacturing or R&D overseas, or encountering risks of replication or infringement. Filing too early can strain limited financial resources, while filing too late may result in the loss of patent rights due to public disclosures or missed deadlines.

The international expansion of a patent portfolio should begin with a strategic assessment of business goals and geographic priorities. Countries that offer market access, manufacturing capabilities, or valuable licensing opportunities should be prioritised. Startups often initiate their global filings either through the PCT system or via direct national or regional filings under the Paris Convention.

How to decide where to file internationally

Deciding which countries to seek patent protection in is one of the most critical strategic choices for any startup. Business value, not just legal feasibility, should drive the selection. A sound decision-making framework can include the following considerations:

- Short- and long-term commercial strategy: Filing should align with both near-term go-to-market plans and long-term expansion goals. Filing in jurisdictions where the startup envisions generating revenue five years from now is just as important as protecting current sales.
- Pre-filing strategy and searches: Conducting prior art and freedom-to-operate searches specific to each jurisdiction can reveal existing patents, shape claim language, and avoid unnecessary filings.
- Going global readiness: Filing internationally makes sense only when the startup is prepared to scale its operations or expand through cross-border licensing.

- Where competitors are located: Strategic locations for filing often include countries where key competitors have their headquarters, manufacture, or dominate the market.
- Market for the invention: Assess whether the target country offers a sizeable and accessible market for the technology. No matter how advanced the legal system, filing where there's no business interest may not be cost-effective.
- Ease of copying: Technologies that are easily reverse-engineered—such as consumer products or process-based innovations—warrant protection in jurisdictions prone to rapid imitation.
- IP budget: Patent filing and maintenance involve significant costs. The decision should balance the breadth of coverage with available capital, using a phased or tiered approach.
- Enforceability: The strength and efficiency of a country's IP enforcement system matter. It's more worthwhile to file in countries with transparent procedures, judicial expertise, and meaningful remedies.
- Licensing possibilities: If monetising IP through licensing is a key consideration, filing in countries where potential licensees or partners are based becomes a priority.
- Possible future of the technology and industry: Patent rights last up to 20 years, so it is important to assess where the relevant industry is likely to mature or shift during that period. Filing in emerging or strategically important technology regions may future-proof the IP strategy.

It is advisable to adopt a tiered approach, which prioritises costs while maintaining alignment with the startup's business trajectory.

- Tier 1: Must-have jurisdictions (e.g., home country, U.S. and EU)
- Tier 2: Regions with moderate commercial interest or active R&D/production (China)
- Tier 3: Optional markets or countries to be licensed via partners (e.g., Singapore, Australia, or Canada)

A global IP strategy must evolve as a startup's business grows and its funding cycle evolves. Startups should begin by identifying core technologies worth protecting and mapping them to commercial opportunities in global markets. Filing through the PCT route offers flexibility and time, while direct national filings are effective when clarity on specific countries exists. Most importantly, the choice of countries for filing must be grounded in business value, target markets, manufacturing hubs, enforcement considerations, licensing potential, and the likely trajectory of the technology's relevance. Jurisdictional differences in patent law must be navigated carefully to ensure enforceable, commercially valuable IP assets. As innovation becomes increasingly global, the strength and reach of a startup's IP portfolio can become a key differentiator in both product markets and investor negotiations.

PCT vs. Direct Filings

The PCT system allows a startup to file one international patent application that is recognised by more than 154 countries. Although it does not result in a single international patent, it simplifies the initial process. It gives startups up to 30 or 31 months from the priority date to decide in which individual countries to pursue protection. This approach helps defer the high costs associated with multiple national filings and provides valuable time for market validation, fundraising, or pivoting. Additionally, a PCT application generates an international search report and an optional preliminary examination, which can help assess the patentability of the invention worldwide.

On the other hand, direct national or regional filings involve filing patent applications in specific jurisdictions (such as the United States Patent and Trademark Office, the European Patent Office, or the China National Intellectual Property Administration) within 12 months of the initial country filing. This route is more appropriate when a startup has clarity on target countries, wants faster grant timelines, or intends to take advantage of jurisdiction-specific incentives or fast-track procedures. However, it requires higher upfront legal and translation costs, and lacks the centralised management that the PCT route offers.

A hybrid approach is also common—startups might file directly in one or two priority markets (like the US or China) while simultaneously filing a PCT application to preserve rights in other countries for future consideration.

What do investors look for in an IP portfolio?

In the fast-moving smart protein industry, having strong, well-managed intellectual property (IP) also shows that the company has solid technology, strong market potential, and the ability to grow in the long run. For investors, especially venture capitalists and large companies, the IP portfolio can determine whether they invest, how much they value the startup, and how involved they want to be.

1. Ownership and clarity of rights
    a. Whether the startup owns the IP or if it is licensed (and if so, whether the licence is exclusive, sublicensable, and royalty-free).
    b. Whether the IP was developed in-house, with collaborators, at academic institutions, or through outsourced labs (e.g., CROs or CMOs).
    c. Whether proper assignments from inventors and contributors have been executed.

Example:
A startup developing egg white proteins via precision fermentation must ensure that the microbial strain design, protein sequence modifications, and fermentation process parameters are clearly owned by the company. If a university lab were involved in the foundational work, investors would look for executed IP assignment agreements.

2. Scope and quality of the IP
    a. How broad are the claims in the patents?
    b. Are the patents enforceable and written in a way to stop design-arounds?
    c. Are trade secrets adequately protected and documented?

Example:
A startup engineering a novel emulsification system to improve the mouthfeel of plant-based meat may have a patent on the composition and manufacturing method. Investors would assess if the claims cover various substitutes (e.g., pea protein, chickpea, mung bean) or are narrowly drafted. Broader, well-drafted claims covering multiple embodiments increase perceived value.

3. Stage and status of the IP
    a. Whether patents have been filed in key jurisdictions (India, U.S., EU, China).
    b. Whether the IP has matured into granted patents or remains pending.
    c. Timing of filing vis-à-vis product launch and public disclosures.

Example:
A startup commercialising cultivated fish fillets may have one granted patent in India, but pending applications elsewhere. Investors typically prefer at least one granted patent in a key market or a well-timed PCT filing giving global coverage options. If the IP filing lags behind product development or public announcements, investors may be concerned about a loss of novelty.

4. Strategic fit and competitive positioning
    a. Does the IP block competitors or fence them out?
    b. How does it compare with competing solutions in terms of uniqueness and technological edge?
    c. Is there freedom to operate (FTO) in key markets?

Example:
If a startup is using CRISPR-edited yeast to biosynthesise heme proteins for flavour enhancement, investors will check for:

- FTO in light of foundational CRISPR patents (e.g., Broad Institute or UC Berkeley), or
- IP around engineered metabolic pathways or expression systems that are exclusive and differentiated.

5. Commercialisation and licensing potential
    a. Can the IP be monetised beyond the core product (e.g., through licensing or joint ventures)?
    b. Does the startup have a roadmap for utilising the IP across multiple verticals—ingredients, finished products, and processing technologies?

Example:
A startup that owns a patented process to reduce the beany flavour in soy protein may license it to

other plant-based meat companies while using it in its product lines. Such licensing opportunities enhance the IP's revenue-generating potential and attract investor interest.

6. Portfolio management and IP strategy
    a. Is the IP portfolio actively managed, with timely divisional filings, continuations, and oppositions against competitors?
    b. Does the startup have a documented IP strategy aligned with its business plan?

Example:
A startup in the precision fermentation space that consistently files patents as it refines its strain optimisation or bioreactor protocols—and tracks competitors' filings for opposition—signals to investors that it is playing the IP game thoughtfully and strategically.

7. Complementarity with regulatory and branding assets
    a. Are regulatory approvals (e.g., FSSAI, FDA GRAS) and trademarks aligned with the IP portfolio?
    b. Does the IP support brand protection and product differentiation?

Example:
A company owns the trademark and design rights for a 3D-printed plant-based chicken nugget, along with a utility patent on the printing mechanism and a trade secret on the spice blend formulation. In that case, investors see a holistic moat being built around both IP and market perception.

IP valuation basics for smart protein startups and innovators

In the smart protein industry, IP is not just a legal tool but a core business asset. Startups rely on their IP to attract funding, forge partnerships, and compete globally. Understanding how to assess and communicate the value of IP is essential for founders, especially when scaling operations or negotiating deals.

Why IP valuation matters

- Investor confidence: Venture capitalists and strategic investors increasingly look at a startup's IP portfolio to gauge its defensibility and potential return on investment. Well-valued IP signals long-term competitive advantage.
- Licensing and partnerships: Whether licensing a cell culture media formulation or collaborating on production platforms, having a valuation-backed IP asset helps negotiate equitable royalty rates or milestone payments.
- Balance sheet recognition: As startups grow, IP may be recognised as an intangible asset on the balance sheet, supporting stronger financial statements and due diligence processes.

- Litigation and insurance: In infringement disputes or insurance coverage for trade secrets, an established IP value aids in calculating damages or insured losses.

Common valuation approaches

1. Cost-based approach

   This method calculates the total investment made in creating the IP, including R&D expenses, personnel costs, regulatory filings, and infrastructure.

   Example: If a startup spends ₹3 crore over 2 years developing a proprietary fermentation process, that becomes the baseline IP value.

2. Market-based approach

   This approach compares your IP with similar assets that have been sold or licensed in the market.

   Example: If another startup licensed a cultivated meat scaffold patent for $2 million upfront plus royalties, that sets a benchmark.

3. Income-based approach

   This forward-looking method estimates future income (e.g., licensing revenues, premium pricing, cost savings) attributable to the IP and discounts it to present value.

   Example: If a protein purification patent is projected to save ₹1 crore annually in production cost, a discounted cash flow (DCF) model may value the IP at ₹5–7 crore today.

Key drivers in IP valuation

- Patent strength and scope: Patents with broad claims covering key methods (e.g., cell-line development, protein structure optimisation, bioreactor design) offer stronger protection and greater licensing potential.
- Stage of development: An IP linked to a lab concept has lower value than IP underpinning a market-ready or validated process. Late-stage or commercial-stage IP is more tangible for valuation.
- Freedom to operate: If your technology does not infringe on others' IP, it reduces future litigation risk. A clean FTO report boosts the perceived safety and value of your innovation.
- Regulatory and technical barriers: IP that addresses difficult hurdles—such as achieving organoleptic parity, reducing production costs per kg, or obtaining regulatory clearance (e.g., FDA GRAS in the U.S. or FSSAI approval in India)—has greater strategic value.

Practical tips for startups

- Document everything: Keep thorough records of experiments, lab notebooks, emails, and expenses to support cost-based and defensibility claims.
- Bundle IP strategically: A single patent may not hold as much value as a bundle of patents, trade secrets, and know-how that collectively offer market exclusivity.
- Engage experts early: Work with IP valuation specialists and patent attorneys, particularly during fundraising, joint ventures, or licensing discussions.
- Update valuation regularly: IP value evolves with milestones—proof of concept, successful trials, manufacturing scale-up, or market entry. Reassess value at each stage.
- Align IP with business strategy: Valuation is more meaningful when IP maps directly onto revenue streams, competitive positioning, or entry barriers.

About the authors:

Dr Goutam Bhattacharyya

Partner—Biotechnology & Biosciences, Member of Management Committee, K&S Partners

A leading patent attorney with extensive experience, Goutam has been consistently recognised by IAM Strategy 300 as one of the world's leading IP strategists for four consecutive years (2019, 2020, 2021 & 2022). Goutam is a member of the India-US Working Group on IPR at the Federation of Indian Chambers of Commerce and Industry (FICCI). He works on building IP awareness among educational institutions, incubation centres, startups, and MSMEs.

About K&S Partners:

K&S Partners is one of India's leading intellectual property law firms. The award-winning law firm supports clients worldwide, including Fortune 500 companies, in all forms of intellectual property rights, including patents, designs, trademarks, copyrights, geographical indications, plant varieties, trade secrets, and related matters.

Ojasvi Uppal

Regulatory Affairs Consultant, GFI India

As a seasoned expert in food safety, law, and regulatory affairs, Ojasvi has helped multiple food businesses with their compliance projects. Ojasvi leads the development of open-access regulatory resources to empower startups with accurate sector knowledge and regulatory requirements. He works to build inroads with regulatory authorities and advises on a clear path to market for smart protein companies.

About GFI India:

The Good Food Institute India (GFI India) is the leading organisation and expert convening body for India's emerging smart protein sector—the ecosystem of plant-based, cultivated, and fermentation-derived meat, eggs, and dairy. As part of an international network of organisations across the U.S., Brazil, Europe, Israel, Japan, and APAC, we are on a mission to build a secure, sustainable, and equitable global food system for all. Working alongside scientists, businesses, and policymakers, GFI India's team focuses on making alternative proteins delicious, affordable, and accessible. Leveraging India's unique strengths—indigenous crops and agrarian economy, low-cost technologies and infrastructure, abundant talent pool, and biomanufacturing prowess—we are pioneering an ecosystem that can put smart protein on every plate.