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Cultivated Meat: India's Action Plan 2026

A synthesis of insights from the **Indian Protein Transition Forum:** a closed-door multi-stakeholder dialogue on building India's cultivated meat innovation ecosystem

May 2026

Background

This document captures the key takeaways from the closed-door stakeholder forum on cultivated meat hosted by CSIR-Innovation Complex Mumbai (C-ICM) and the Good Food Institute India (GFI India) in May 2026. The convening brought together a mix of stakeholders across the ecosystem: cultivated meat startups joined biotechnology and food technology experts, along with ingredient and equipment manufacturers. Academic and government research institutions, public and private sector incubators, international research centres, and ecosystem facilitators also participated in the discussions.

The dialogue was held under the Chatham House rules. This document, therefore, records a summary of the discussion and its key takeaways as a collective representation of stakeholder thinking without attributing statements to individuals or their organisations. Where companies, institutions, or initiatives are referenced, they are only mentioned to provide publicly known context or examples that were discussed openly during the session.

Where the sector stands today

Globally, the cultivated meat sector has received regulatory clearances in multiple jurisdictions, and several companies have crossed remarkable milestones in their scale-up journey by establishing pilot- and commercial-scale facilities, including at never-before-seen bioreactor capacities for cultivated meat. Overall production costs, however, remain a major barrier. While the often-cited target of one US dollar per litre for cell culture media has been cracked by some, most companies continue to face challenges, including expensive feedstock (driven by imported raw materials such as amino acids) and capital expenditure, which together drive a large share of costs.

The Indian cultivated meat ecosystem, in particular, sits at a crucial inflection point. The Union Cabinet's approval of the BioE3 (Biotechnology for Economy, Environment and Employment) Policy in 2024 placed smart proteins among six prioritised thematic sectors driving India's ambition to grow the bioeconomy from approximately USD 165 billion in 2024 to USD 300 billion by 2030. The Department of Biotechnology (DBT) and Biotechnology Industry Research Assistance Council (BIRAC) have since operationalised the policy through a dedicated Call for Proposals on Smart Proteins under BioE3, explicitly covering “cell-culture-based” meat (cultivated meat) technologies alongside plant-based and fermentation-derived smart proteins. Anchor research grants have followed, including the launch of the National Biofoundry Network in August 2025, which signalled a clear intent to scale biomanufacturing infrastructure that includes cultivated meat within its scope. Perhaps most consequentially for

this conversation, India's first animal stem cell biobank opened in 2025 with cultivated meat as a stated focus area, primed to address one of the most significant constraints cited by stakeholders for years.

Startups in this sector have grown along with the policy momentum, with six dedicated cultivated meat startups now working across hybrid chicken, scaffolding technology, food-grade culture media, and bioreactor-scale production. The first public cultivated meat tasting facilitated by startups and supported by key stakeholders, including chefs and culinary institutions, was held in 2025, demonstrating the sector's maturity. As cultivated meat end products inch closer to market readiness, DBT-BIRAC and the Food Safety and Standards Authority of India (FSSAI) have conducted expert conclaves and discussion panels scrutinising regulatory pathways for cultivated meat and seafood. This domestic progress is unfolding against a more selective global investment backdrop: cultivated meat companies worldwide raised approximately USD 74 million in 2025, with investors prioritising firms that can demonstrate measurable progress on cost, taste, and scale.

Against this backdrop, India's cultivated meat ecosystem now brings together several distinct and complementary strengths. Along with the startups, there is a growing cohort of scientists from premier research institutions and allied sector experts actively exploring the cultivated meat domain, bringing deep food technology and industrial biotechnology knowledge that is crucial to tackle fundamental cost and scale-up challenges. Public and private sector incubators and a maturing base of ingredient and equipment suppliers have also forayed into this sector, helping close the infrastructure and supply chain gap.

Key takeaways

I. Specialise deeply, connect deliberately

There is a clear and recurring consensus that no single company can—or should—attempt to solve every bottleneck in the cultivated meat value chain. Firms that have previously attempted vertical integration from cell line development to media formulation, scaffold design, and all the way to final product formulation have eventually encountered limitations in team expertise and capital.

> Each specialist in the chain needs credible counterparts to interface and collaborate with.

Recognition of this means designing the ecosystem and the funding instruments that support it around interlocking specialisations, rather than the ambition of any one firm to build a

complete in-house stack. It also creates more space for cross-sector learning: stakeholders observed that solutions to scale-up economics, process automation, and supply chain design are unlikely to emerge from within the sector alone and that perspectives from sectors such as agritech and pharmaceutical industries can usefully be imported.

The Bezos Centre for Sustainable Protein at North Carolina State University, which has been engaging and collaborating with more than 200 global alternative protein ecosystem stakeholders, is an example of how a centralised, cross-disciplinary hub can act as a force multiplier for the entire sector.

II. Anchor R&D in long-term product readiness

A company's scientific R&D must anchor itself in business strategy and, more fundamentally, in consumer demand.

> The disconnect between laboratory milestones and market-ready product formats was identified as one of the most consequential yet least discussed shortcomings in the field.

For instance, optimising a cell line and serum-free culture media for ideal doubling times through rigorous internal R&D does not necessarily ensure that the biomass will taste good when cooked. In practice, cultivated meat companies often need to work closely with media manufacturers to develop food-grade formulations tailored to their specific cell lines, and while that is crucial for product development, it does not guarantee consumer-ready end products with optimal taste. True success of cultivated meat will depend as much on nutrition and sensory parity as on cell biology.

Indian consumers are highly attentive to nutrition, fortification, and protein quality, and these dimensions cannot be treated as secondary to manufacturing economics. In fact, the near-term end-product strategy is likely to centre on hybrid formats containing a modest fraction of cultivated cells (1–15 percent) blended with plant-based ingredients—guaranteeing taste and a fibre-rich composition.

Research on cultivated meat's nutritional bioavailability, sensory science, and consumer perception in the Indian context has been acknowledged to be under-explored, calling for additional resources and attention to this critical workstream.

III. Move to consortium-based, milestone-driven funding

The dominant funding model should evolve away from narrowly scoped, single-investigator grants towards consortium-based instruments that bring together academic groups, startups

and companies, along with specialised equipment manufacturers, toward a shared, end-product-oriented goal. A practical example of structuring a grant around developing a specific cultivated meat format, such as chicken keema or a mutton kebab, with constituent work packages allocated to specialised partners and progress measured against milestones jointly owned by the consortium, is demonstrated in this collaborative funding model.

Within the BioE3 policy framework, each of the six thematic areas—including smart proteins—requires a tailored funding structure.

> Complementing basic science research, targeted public-private mechanisms, milestone-linked grants, and collaborative end-product-oriented funding calls would be more impactful than more generic capacity-building support.

Funding remains a major constraint for cultivated meat because the sector sits at the intersection of biotechnology, food, and biomanufacturing. Deep-tech investors may be comfortable with the scientific risk of a novel domain but often lack the specific expertise to assess cultivated meat technologies. On the other hand, traditional venture capital typically expects faster returns than the emerging food sector can deliver, especially given the time and capital required to build production infrastructure for scaling.

Lessons from prize-based initiatives such as XPRIZE Feed the Next Billion suggest that complex technological challenges are often better addressed through collaborative models that combine specialised expertise across different workstreams, rather than relying on a single team to solve every aspect of the problem.

IV. Build shared infrastructure, beginning with a cell line repository

An overwhelmingly agreed-upon goal is shared national infrastructure, particularly for an accessible, well-characterised cell line repository covering species and tissue types relevant to Indian product priorities: chicken, mutton, seafood, and potentially non-traditional species. Current dependence on imported cell lines, combined with rigorous customs procedures that can hold up time-sensitive consignments (often rendering entire shipments unviable), can be a real constraint for startups exploring new product research. Dedicated cell line repositories for cultivated meat, like the one established by GFI in partnership with the Tufts University Center for Cellular Agriculture (TUCCA) with cell lines and growth media acquired from defunct startup SciFi Foods, is a useful design reference for an open, nominally priced model.

A comparable Indian model is the upcoming BRIC-National Institute of Animal Biotechnology (NIAB) animal stem cell biobank, which can become a strong India-based hub for cell lines in cultivated meat applications.

Beyond providing access to biological materials, such repositories should prioritise comprehensive characterisation of banked cell lines and the generation of open-access genomic, phenotypic, and culture-performance data.

Alongside physical infrastructure, a clearer map of the ecosystem (similar to GFI India's ecosystem database) spanning consultants, co-manufacturers, equipment players, public and private incubators, and ingredient players alongside the food product manufacturers active in cultivated meat will be critical for companies, researchers, and funders to readily identify who is doing what and form partnerships.

V. Open up data sharing—including failed experiments

Data sharing is a critical and currently underdeveloped enabler. Every new company in this emerging sector effectively starts from scratch due to the lack of shared knowledge of what has been tried and what has failed. Excessive secrecy within the global cultivated meat industry has slowed technological progress and threatens the sector's long-term success. Many startups continue to treat core advances in areas such as cell lines and bioprocessing as proprietary information, limiting collaboration and causing regular duplication of effort across the industry. In the absence of shared data norms, cultivated meat companies fail to grow quickly and are eventually forced to shut down, with institutional knowledge, sadly, repeatedly lost.

The value of sharing datasets such as custom media formulations, scaffold compatibilities, cell suspension, and cell stability studies, to the extent possible, can potentially accelerate wider innovation and improve investor confidence.

A standardised pre-competitive collaboration proposal includes creating an anonymised data repository with both successful and failed experiments, which could feed AI/ML models with critical data points from cultivated meat research. A workable structure of a small founding consortium of three or four willing partners and explicit guidelines around sharing experimental data without the need to disclose core commercial assets is a good starting point.

VI. Use IP and industry engagement to enable, not gatekeep

While intellectual property (IP) rights are important to protect innovation, competitive advantage in nascent fields like cellular agriculture often comes from demonstrating technological success rather than from patentable invention. Currently, valuable IP is being effectively buried inside companies that may not survive long enough to commercialise it. On the flipside, for many startups, monetising existing IP is essential to sustain operations and attract investment.

> Practical mechanisms for IP monetisation and dilution through well-designed contractual arrangements or memoranda of understanding (that explicitly define IP ownership and commercialisation rights) would enable, instead of inhibiting, participation in shared infrastructure or consortium research.

The concept of an industrial sandbox, where stakeholders surface real problems for academic groups and startups, attracts broad interest, tempered by realistic scepticism. In the Indian context, industry-defined research problems have so far attracted limited engagement from large food, agriculture, and biotechnology firms. Philanthropic funders have, to date, been more willing than the domestic industry to underwrite such work.

Initial sandbox engagements may, therefore, need blended funding from public, philanthropic, and industry sources, with trust between parties built over time before larger corporate commitments follow.

VII. Make regulatory readiness a strategic, upstream priority

Regulatory engagement is a strategic upstream priority rather than a downstream activity. The current dossier-based, case-by-case safety assessment model places the entire burden of demonstrating product safety on first movers, as they still build regulatory familiarity with the technology. This process will be inefficient given the size of the sector and the technical complexity involved.

> The sector needs a more ecosystem-led approach of collective investment in hazard identification, toxicology evaluation, and risk assessment, conducted collaboratively with scientists, academic bodies, companies, and regulatory experts, similar to a ‘regulatory sandbox.’

Building shared scientific literacy for the regulator, allied ministries, and ultimately consumers strengthens the evidence base for a seamless path to market. Ultimately, when individual product applications are submitted, the underlying science will give the regulator far greater confidence, shortening regulatory timelines for the sector.

Key next steps: How we move forward together

The discussion culminated in a set of next steps for each segment of the ecosystem to contribute toward. These recommendations identify actions that are within reach for each stakeholder group, while recognising that progress in any one area will depend on coordinated progress across the others.

For policymakers and regulators

- ➔ Through the BioE3 Policy's funding mechanisms, design end-product-oriented consortium grants that fund the full innovation chain, rather than isolated research ideas.
- ➔ Establish a shared national infrastructure for a well-characterised, accessible cell line repository and biomanufacturing infrastructure, such as pilot-scale bioreactors and downstream equipment for scale-up trials.
- ➔ Enable safety and regulatory-related capacity-building through ecosystem-led work on hazard analysis and risk assessment, building foundational scientific knowledge for the regulator and allied ministries.
- ➔ Streamline administrative procedures between public institutions, startups, and corporates to unlock collaboration that is currently held back by procedural roadblocks.

For startups and industry

- ➔ Identify specific technological bottlenecks for food, biotechnology, and ingredient companies and form structured partnerships across the value chain, aligning R&D explicitly with business strategy.
- ➔ Fund industrial sandboxes with well-defined problem statements and data-sharing models for academic groups and startups to jointly collaborate on product-linked deliverables.
- ➔ Through industry-led consortia, build datasets on cultivated meat sensory science, nutrition, and bioavailability, including hybrid formats.

For academia and research institutions

- ➔ Host infrastructure anchoring training centres, cell line repositories, and data commons for advanced cultivated meat technologies at public research institutions.
- ➔ Engage with industry partners through clear, business-aware MoUs that lead to translational research and commercialisation.
- ➔ Build dedicated coursework, fellowships, and hands-on skilling workshops for cellular agriculture and allied disciplines to provide the talent base the sector needs over the coming decade.

Closing reflections

The takeaways captured in this document reflect an overwhelming recognition of the cultivated meat sector's progress in establishing achievable metrics for techno-commercial success. The dialogue identified a critical inquiry into the following:

Who owns which bottleneck?

How do public and private capital come together to fund the full value chain?

How does shared infrastructure get built and governed?

How will the regulator develop confidence in the science?

How can the Indian consumer archetype be built into product design from the start?

None of these questions has a clear answer today. What was clear from the discussion, however, is that the actors required to answer them—startups, established firms, academic groups, public institutions, ingredient and equipment suppliers, the regulator, and ecosystem facilitators—are now visible to and willing to work with one another. The next phase involves translating that alignment into structured consortia, milestone-driven funding, shared infrastructure, and an upstream regulatory pathway.

About the Good Food Institute India

The Good Food Institute India (GFI India) is the leading expert on 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 work at the intersection of science, business, and public sector engagement to accelerate the R&D, technical know-how transfer, industrialisation, and commercialisation of smart proteins in India.

We endeavour to unlock the knowledge and resources needed to transform how meat is made—satisfying rising food demand in ways that accelerate climate progress, protect animals and ecosystems, and strengthen public health. Drawing on India's unique strengths—including indigenous crops, a strong agrarian economy, low-cost technologies and infrastructure, an abundant talent pool, and biomanufacturing prowess—GFI India provides strategic market intelligence, ecosystem development support, and sector-focused advisory to help advance smart protein innovation and market readiness.