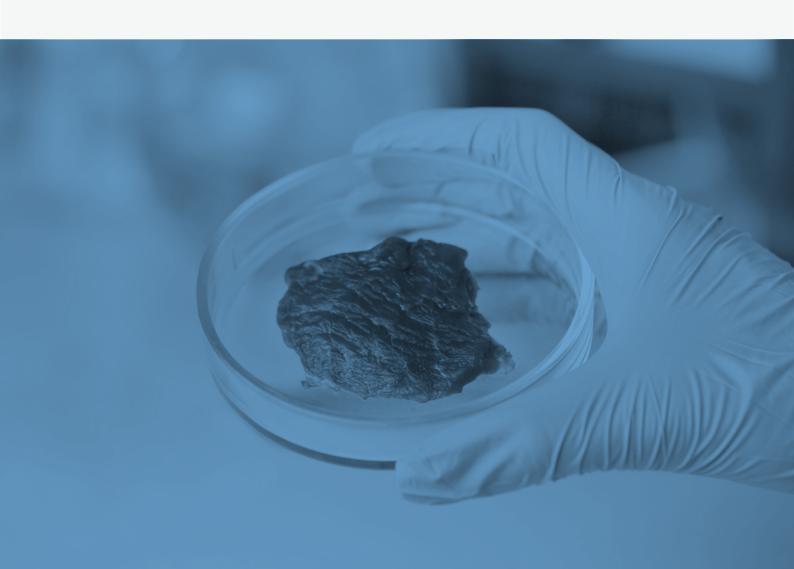**Lever VC Insights**

Cultivated Meat Scientific Benchmarks

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Benchmarks-Based Scoring Guide for Cultivated Meat

When evaluating companies in the alt-protein space that have a technical or scientific component, Lever VC conducts in depth scientific & technical due diligence (SciTech DD). The depth and standard of SciTech DD can greatly affect the quality of investment decisions for technology driven companies. The quality of SciTech DD depends on many factors including analytical strength, expertise and experience, and resource capacity. Within any given investment setting, the estimation of novelty, quality and risk is often skewed by external company marketing bias, investment evaluator bias, different perspectives amongst investment team personnel, uncertainty around the relative importance of various R&D facets, and limited competitor / benchmark information. These factors can result in lower quality SciTech DD. The presence of two scientific team members, Jonathan Avesar and Jasmin Kern, gives Lever VC a unique advantage when evaluating technical deals.

In order to ensure a robust SciTech due diligence process for prospective Lever VC investments, we have developed a benchmark-based scoring guide for Cultivated Meat (CM) which utilizes scientific and engineering benchmarks from other CM companies which Lever has reviewed or gathered information on (company-specific data is organized in the CM tech database). By referencing a previously defined and agreed upon set of criteria, external evaluator bias can be reduced, and investment team perspectives can be anchored to a standardized set of expectations for companies at different stages of development. By identifying key progress indicators (KPIs) and comparing them across similar companies, magnitudes of novelty, progress, technological readiness, risk, and the validity of claims can be evaluated. Lastly, the *overall* assessment of a company's technology takes into account all related facets and KPIs in a manner that emphasizes the relative importance of each one (e.g. weighted average or sum). While fully quantitative scoring is not possible due to high associated complexity in addition to the presence of intangibles, the following is Lever's first attempt at a semi-quantitative approach for CM technology scoring. This output streamlines the Lever VC due diligence process, and serves as a robust screening and benchmarking tool to precede other more detailed aspects of our scientific DD. It is worth noting that:

- The guide is compounding, meaning a company at any particular stage is evaluated using the criteria within its corresponding stage as well as criteria in any earlier stages (e.x. A seed-stage company is evaluated using seed and pre-seed/concept criteria)
- a proof-of-concept (POC) is defined as an experimental validation of core concepts in a manner that is mostly independent of CM production scales
- when applicable/required, common sense engineering principles and tissue engineering expertise was used to derive criteria

Pre-seed/concept stage

- Demonstrable novelty of significant magnitude
  - No novelty - **acceptable** if company is first mover and/or score highly in other categories
  - Medium novelty magnitude - **good**
  - High novelty magnitude (unfair advantage) - **fantastic**

- POC for Novelty
  - Not applicable
  - No POC - **acceptable** if magnitude is high and/or claim is not extraordinary
  - Weak POC - **reasonable** for this stage (risk depends on claim)
  - Strong POC - **fantastic**

- Defensibility (non-obvious, patent/trade secret)
  - Obvious & easy to achieve - **only acceptable** if other facets are good
  - Obvious & difficult to achieve - **acceptable** if execution is good
  - Not obvious & easy to achieve - **acceptable** if patentable
  - Not obvious & difficult to achieve & trade secret - **good**
  - Not obvious & difficult to achieve & patentable - **amazing**

Seed stage

- Cell line isolation and characterization
  - Verification & characterization of identity
    - Phenotype analysis - **basic**
    - Antibody staining - **good**
    - Genomics - **good**
    - Transcriptomics - **amazing**
    - Proteomics - **amazing**
  - Proliferation performance (doubling time)
    - > 36 hours - **bad**
    - ≤ 36 hours - **required**
    - ≤ 24 hours - **good**
    - ≤ 12 hours - **amazing**
  - Immortalization performance
    - < 30 passages – **bad** (not immortalized)
    - ≥ 30 passages - **required**
    - ≥ 50 passages - **good**
    - ≥ 100 passages - **amazing**

- Media cost reduction
  - Using serum and/or Pharma-grade - **bad** (should have strong novelty or be exceptionally high in other categories)

- ○ Chemically defined (pharma grade) - **expected**
- ○ Chemically defined (pharma basal + GMP recombinant GF) - **good**
- ○ Chemically defined (any food-grade components) - **amazing**

- Scale-up
  - ○ No process design - **bad**
  - ○ Preliminary process design - **expected**
    - identifying possible paths and likely directions for focus with regard to COP and R&D resources required/risk
  - ○ Unit economics estimations / techno economic models - **good**
  - ○ Any tangible accomplishments - **amazing**

- Final product structuring
  - ○ Plan/POC missing - **bad**
  - ○ Established plan and POC - **expected**
  - ○ Prototypes for pictures and internal tasting - **good**

Series A stage

- Media cost reduction
  - ○ ≤ $1,000/L - **required**
  - ○ ≤ $100/L - **good**
  - ○ ≤ $10/L - **amazing**
  - ○ ≤ $1/L - **long term target**
  - ○ ≤ $ 0.10L - **red flag (BS)**

- Benchtop reactor volumes operating at (prior to pilot)
  - ○ < 1 L - **bad**
  - ○ ≥ 1 L - **required**
  - ○ ≥ 5 L - **good**
  - ○ ≥ 10 L - **amazing**

- Terminal cell density
  - ○ ≥ 1e6 cells/ml - **required**
  - ○ ≥ 1e7 cells/ml - **good**
  - ○ ≥ 1e8 cells/ml - **amazing**
  - ○ ≥ 1e9 cells/mL - **red flag (BS)**

- Plans for pilot plant
  - ○ Reactor volumes
    - ≥ 50 L - **required**
    - ≥ 500 L - **good**
    - ≥ 5000 L - **amazing**
  - ○ CAPEX model - **required**

- ○ Detailed process design - **required**
- ○ Techno economic model - **required**

- Final product structuring
  - ○ Mature prototype - **expected**
    - ■ Single-line production capacity (structured only)
      - Not applicable
      - ≥ 10 kg/hr - **expected**
      - ≥ 100 kg/hr - **good**
      - ≥ 500 kg/hr - **amazing**
      - ≥ 100 kg/hr - **long-term target**

- Organoleptics
  - ○ Prototypes for internal tasting - **required**
  - ○ Samples readily available for investors - **good**
  - ○ Statistically significant 3rd party tasting panel - **amazing**