

Bharat Biotech

Innovation Summary

□ Context

- Indian biopharmaceutical industry is mainly in the business of biogenerics (Manufacturing expired patent products)
- Existing technology for producing vaccines uses toxic chemicals and heavy metals thus also increasing the cost of the product
- Existing technologies come with rigid processes and infrastructure requirements that are difficult to challenge

□ Challenge/ Opportunity

- Develop a new innovative technology that does not use toxic chemicals and heavy metals and drastically reduces the cost and time of production
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Innovation

- Have developed a Process called Himax Technology to manufacture Biopharmaceuticals
 - “Himax Technology” is novel, simple, fast process eliminating the usage of Ultra centrifugation and toxic cesium chloride, leading to substantial reduction in the cost per unit vaccine vial
 - Relies on isolating the rDNA gene
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Innovation Scorecard

□ Uniqueness

- Enables the company to produce low cost pharmaceuticals at a rapid pace **Data Source: BBIL; Claim seems credible**
- Can be used on relatively unrelated types of medicines: relies on isolating the rDNA gene **Data Source: BBIL; Claim Validated**
- Globally Revac-B+ is the only vaccine, which is free of toxic heavy metals **Data Source: BBIL; Claim Validated**

□ Impact

- HIMAX technology makes some steps (three actually) in the purification process redundant thus bringing the overall purification time down. There has therefore been a substantial reduction in the process time. **Data Source: BBIL; Claim Validated.**
 - These processes have eliminated the usage of costly chemicals and equipments leading to an increase in the profits to about 65%. **Data Source: BBIL; Claim Validated**
 - The processes developed have eliminated the usage of costly carcinogenic chemicals such as IPTG and heavy metals, which are also environmental pollutants. **Data Source: BBIL; Claim Validated**
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Innovation Scorecard

□ Leverage

- These innovations have been carried out using indigenously available resources. This has led to higher outputs using locally available resources.
- The Himax technology, which was initially developed for the purification of HBs Ag was latter used for the purification of other vaccine, antigenic proteins like for example, rabies vaccine, diphtheria vaccine and tetanus toxoid

Data Source: BBIL; Claim Validated

Jury Questions and Auditor Remarks

- ❑ Patented HImax? Yes and validated
 - ❑ Check with Varaprasad Reddy: cost of hepatitis B?
Shanvac: Rs 26-28 BBIL's Rs 18
 - ❑ BBIL's vision is to develop uniqueness within the biogenerics domain by leveraging intellectual property (patenting both product and processes).
 - ❑ In the short span of 7 years they have achieved considerable amount of breakthroughs when compared with other Indian players , in a field dominated by global majors (Pfizer, GSK , Merck and Aventis) who draw on a huge time advantage (which translates into R&D and Profitability).
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