



Ministry of Science & Technology

# DBT-BIRAC supported start up Blackfrog Technologies

## Supporting the Last-mile Delivery of Vaccines

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DBT-BIRAC supported startup Blackfrog Technologies has developed Emvolio, a portable, battery-powered medical-grade refrigeration device that improves the efficiency of the immunization by strictly maintaining preset temperature for up to 12 hours, thus enabling the safe and efficient transportation of vaccines to the last mile.

Emvólio has a 2-litre capacity, enabling it to carry 30-50 vials, the standard for a daylong immunization campaign. The device also includes continuous temperature monitoring, location tracking, state-of-charge indication, communication with headquarters via live-tracking, and vital statistics for improved coverage.

Blackfrog is an ISO-13485 certified manufacturer of medical devices, and Emvólio has been designed in accordance with WHO-PQS E003 standards. Emvólio's patented technology ensures that all contents in the cold chamber are blanketed in strictly temperature-controlled air. The underlying refrigeration mechanism is solid-state cooling with a smart PID (Proportional Integral Derivate) controller, which guarantees precise temperature maintenance without the risk of noxious refrigerant leakage or cross-contamination. The lack of motors/compressors or any moving parts enables low-maintenance operation. The unique design of Emvólio promises uniform cooling and minimal freeze-thaw cycles.

Due to its ability of the device to strictly maintain the temperature between 2°C and 8°C for up to 12 hours in the field, the device is being used as a platform for delivery of vaccines and all other biologicals like blood, serums, viral culture. The innovation solves the current challenge of last-mile vaccine delivery as currently iceboxes, which have no mechanism for temperature control and regulation, are being used. The absence of temperature control and regulation in iceboxes also poses the risk of accidental freezing and thawing, rendering the temperature-sensitive vaccines inefficacious.

This startup has received grants from BIRAC under SEED fund, BIG for the development of proof-of-concept, BIPP for developing an end-to-end vaccine traceability system and has also been supported through BioNEST incubators.

Blackfrog has a production capacity of 1500 units/month, and Emvolio is now being deployed across North-East India with necessary clearance from the National Health Mission. Till now, Blackfrog has also sold 200+ vaccines carriers across 5 states in India for safe last-mile delivery of vaccines.



**For Further Information: Contact Communication Cell of DBT/BIRAC**

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The Department of Biotechnology (DBT), Ministry of Science and Technology, boosts and augments the development of biotechnology ecosystem in India, through its expansion and application in agriculture, healthcare, animal sciences, environment, and industry.

### **About BIRAC**

Set up by the Department of Biotechnology (DBT), Government of India, Biotechnology Industry Research Assistance Council (BIRAC), is a not-for-profit Section 8, Schedule B, Public Sector Enterprise, which acts as an Interface Agency to improve and encourage the evolving biotechnology industry to execute strategic research and development activities in context to Nation's product development needs.

SS/RKP

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