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Poster abstract submission

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Poster title
Effects of Incentive Mechanisms on Innovation and Collaboration in the Antibiotics Market

Poster abstract

The global rise of antibiotic resistance represents one of the most pressing challenges in healthcare today. One root of this crisis is a clear market failure in antibiotic innovation: large pharmaceutical companies (Big Pharma) have withdrawn due to high uncertainty and limited returns, while small and medium-sized enterprises (SMEs) face prohibitive R&D costs. From an economic welfare perspective, an efficient antibiotic innovation ecosystem would leverage SME-driven early-stage R&D paired with Big Pharma's late-stage development and commercialization capacity. This highlights the urgent need for targeted incentive mechanisms to promote investment and cooperation across the antibiotic value chain.

This study examines how the design of incentive mechanisms influences investment and cooperation behavior of SMEs and Big Pharma in the antibiotics market. In a controlled laboratory experiment, participants engaged in simulated markets replicating realistic cost, revenue, and risk profiles of antibiotic R&D under different incentive schemes. Five models — research grants, market entry rewards, milestone payments, combined grants & entry rewards, and a holistic cross-phase model — were tested, all standardized for expected net present value, but differing in timing and distribution of payments throughout the innovation process.

Results reveal that market entry–focused pull incentives alone are ineffective for both SMEs and Big Pharma, leading to low investment and cooperation rates. While research grants substantially increase SME participation, they do not sufficiently engage Big Pharma. In contrast, cross-phase incentives, spanning multiple development stages, achieve the highest levels of investment and cooperation, thereby robustly promoting welfare-optimal innovation.

These findings suggest that policymakers and funders should move beyond single-stage push or pull incentives and instead prioritize cross-phase mechanisms to effectively and sustainably stimulate global antibiotic innovation.

Research topic Small molecule therapeutics

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