

# BURPA or Bust!

## How to build a Bio-Unified Research Project Agency? (Extended Abstract)

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**Abstract.** A specter of sky rocketing drug prices is haunting the global health care. A novel market micro-structure in alliance with theories from financial engineering, smart contracts, systems biology and information asymmetric games can exorcise this specter, thus enabling lower per-patient costs for both curative and non-curative therapies for acute and chronic diseases, respectively, while accelerating research on drug discoveries.

Here, we formalize our and others' earlier design of mega-funds via an information-asymmetric signaling game model and then implement it with verifiable smart contracts. The model not only elucidates how the stakeholders strategically interact in this market using deception, adverse selection, moral hazards, etc. but also how to tame their interactions to improve the overall performance. In particular, we suggest and rigorously evaluate an embodiment built on a scalable implementation of smart contracts and crypto-currencies. Using extensive simulations, we show that, in the smart-contract-based mega-fund both senior and junior tranche investors get their principals fully repaid in 99.9% of the time.

*In costly signals, we trust; it's BURPA or bust!*

**Keywords:** Smart Contracts, Information Asymmetric Games, Cancer Megafund