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Guiding principles of value creation through collaborative innovation in pharmaceutical research

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Q2 **Open innovation has become the main trend in pharmaceutical research. Potential obstacles and pitfalls of collaborations often lead to missed opportunities and/or poorly executed partnerships. This paper aims to provide a framework that facilitates the execution of successful collaborations. We start by mapping out three checkpoints onto early-stage collaborative partnerships: inception, ignition and implementation. Different value types and value drivers are then laid out for each stage of the partnership. We proceed to propose a ratio-driven approach and a value-adjustment mechanism, enhancing the probability of successes in pharmaceutical research collaborations. These guiding principles combined should help the partners either reach agreement more quickly or move on to the next potential project.**

Introduction

The biopharmaceutical industry continues to wrestle with the problem of R&D efficiency: R&D costs [1] are rising even as output [2,3] of new molecular entities has remained relatively flat [4,5]. As a consequence, the pharmaceutical community has continued to deepen its commitment to a more collaborative approach toward R&D, with open innovation [6] models ranging from true pre-competitive consortia [7,8] to more-structured arrangements [9,10] that can address intellectual property (IP) issues. In this paper, we address the latter group, focusing on the specific hurdles that can stand in the way of efficiently starting collaborations between willing parties. Many opportunities for productive collaborations are missed because potential partners often find it difficult to reach an agreement on the value of ideas, methods and prototypes in the drug discovery process. Sometimes, a lack of clarity on key short-to-mid-term metrics or key performance indicators [11] can exacerbate the problem. Finally, disagreement can arise regarding the status of potential therapeutic molecules – one company's hit is often another company's pre-clinical candidate. Herein, we seek to provide a framework to ease the launch of nascent collaborations, with the goal of reducing the number of missed opportunities for open innovation in pharmaceutical research.

Establishing an innovation-based collaboration is an inherently complex process owing to the dynamic nature, elusive valuation and intrinsic risk of early-stage pharmaceutical research. To illustrate our approach, we briefly describe a classic example that typifies the challenges and opportunities facing such collaborations.

- Company X specializes in antibody hit generation, whereas Company Y bases its business model on proprietary rapid screening technologies for hit identification and lead generation. The initial connection between the parties is made through an industry veteran, and a mutual respect quickly develops. Both teams recognize the crucial need for rapid generation of differentiated leads against novel biological targets and believe that they can create significant synergistic value by combining their proprietary technology platforms. They also recognize that they can more-effectively provide services to third parties using the combined

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platforms. However, the discussion on how to collaborate lasts much longer than expected. Conversations become protracted as the partners debate how valuable their technology platform is and how value should be distributed, which party should take the lead in integrating the inputs and how many resources each should contribute. What once seemed like a straightforward partnership now appears like it might not be brought to fruition.

Unfortunately, situations like this hypothetical example occur constantly, whether it is between two small companies, a large pharmaceutical company and a biotechnology company or a university laboratory and a large pharmaceutical company. Our suggestions are designed to help potential partners pull themselves through this period of uncertainty by addressing key questions systematically:

- How can we structure the collaboration discussion?
- How should we recognize the various kinds of values that parties bring to the collaboration?
- How can we distribute values between two or more partners in an efficient manner?
- How do we avoid common pitfalls in the collaboration itself?

Based on our previous experience in the field of biopharmaceutical research, we point out the common mistakes and pitfalls that frequently hamper the execution of innovative collaborations. Quantitatively evaluating and attributing the values generated by partners in an innovative collaboration setting can be a complex process and often constitutes the biggest obstacle for such a collaboration to move forward. Although the respective collaborator's contributed values should ultimately be defined in quantitative terms, in the context of early-stage collaboration involving cutting-edge science or technology we recommend postponing the quantification of value contributions made by parties. This paper outlines guiding principles for value assessment and proposes a ratio-driven approach to circumvent the often-dragged-out discussions of value assignment among parties. We encourage partners to think in terms of ratios and only consider the final value – the exit value – when the collaboration is carried out successfully. The exit value at the point of implementation will be typically determined by more-sophisticated capital market players than the initial scientific collaborators.

Four principles to guide collaborative innovation

Principle 1: frame the collaboration in three phases

To provide a clear framework for innovation collaboration, we suggest that the potential collaboration partners frame the collaboration in three phases, each of which is completed with a checkpoint (Fig. 1). Each checkpoint can be viewed as a milestone during the collaboration process, normally accompanied by detailed discussions between the parties, including the construction of workplans to ensure the successful progression of a collaboration. By inserting these key checkpoints into the otherwise complex process, one can lower the threshold for starting the collaboration and map out a clearer path for value generation. Below is the detailed characterization of each phase and checkpoint.

- Phase 1 → inception. The early part of Phase 1 is often marked by a scouting period, during which the two parties meet as part of a random encounter or as the result of a focused search. The potential collaborators come to recognize that they have a project of mutual interest in drug discovery and development. A positive tone often characterizes these early conversations, because the scientists begin to realize that a collaboration could augment the value of their ideas, methods or prototypes, and perhaps even accelerate their R&D. After a confidentiality disclosure agreement (CDA) is put in place, the discussions at inception should focus on material transfer agreements (MTA), pilot experiments and other assessments that might be necessary to increase confidence or provide preliminary proof-of-concept. Some collaborations fail to reach the point

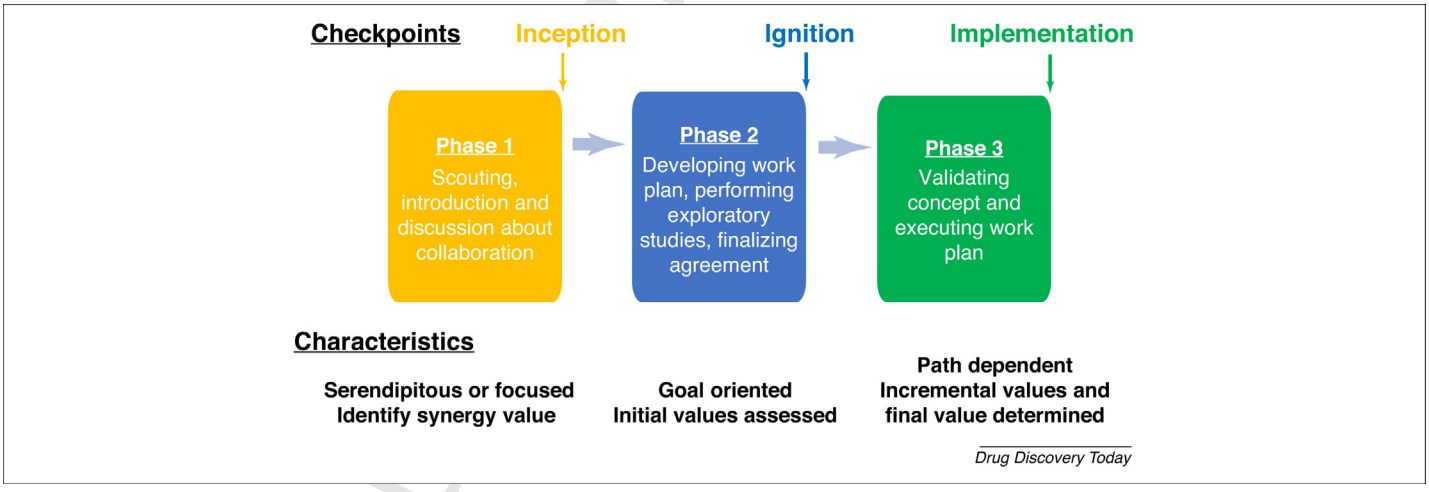

FIGURE 1

Frame the collaboration in three phases with distinct characteristics and three checkpoints. Phase 1: inception. This phase is often marked by a scouting period, during which potential collaborative parties meet as part of a random encounter or as the result of focused search. The involved parties focus their energies on assessing potential synergies and on the design of crucial experiments. Phase 2: ignition. The main scientific goal for collaborators is to conduct whatever exploratory studies are necessary to properly develop a joint research plan. In parallel, the discussion of value distribution among parties will reach an initial agreement. At the end of Phase 2, the collaboration should have reached the point of 'ignition', at which time a research plan is in place, a collaboration agreement is executed and the parties are ready to launch into a full collaboration. Phase 3: implementation. The primary objective is to implement the research plan and accomplish the collaborative research objectives. Depending on the path and the outcome of the collaboration at this phase, parties can reassess and readjust value distribution to better reflect the initial and incremental contributions made.

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