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Symbiotic Innovation*

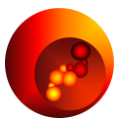
**a modular web-based drug discovery concept
for optimized value generation in academia-industry
competence networks and collaborations**

developed by:

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*Although developed for the biopharmaceutical industry, this concept may be applicable to innovation dependent industries, that rely on complex, iterative R&D processes in the pre-competitive, but also IP-sensitive stages of product development. In addition, it is a narrow line between introducing a new complex value creation model for acceptance, without divulging all essential details that would make the support and services of InnVentis' team redundant. However, much care has been taken to analyse the literature on scientific economic, sociologic, biomedical research aspects and learning theories for over three years in close communication with opinion leaders and by the use of the www as a discussion forum, in order to create a model which is unbiased by the necessity to comply with a given funding program, merging strategy, or other conflict of interest.



Prologue:

Today drug discovery organisations are facing an increasing amount of data and opportunities combined with a wealth of technologies that are need sequentially or in parallel to deliver a product to the market. The increasing complexity results in the need for more effective organisational structures to enable informed decision making at the highest level of confidence; i.e. efficient exploitation of existing resources requires matrix networks that allow *collective learning*. Current institutional and industrial organisations cannot generate the symbiotic and synergistic anatomies to address these complex challenges, since they evolved under an other drug discovery paradigm. Thus, novel models must be explored, that in the long run replace existing models for value creation from science.

InnVentis is designed as an explorative field study with the goal to identify and address key obstacles in creating novel and more efficient organisational structures to create value from science. Although much care has been taken to identify putative challenges *a priori* it is the nature of innovation that the validity of the model needs to be corroborated in a real world experiment. Nevertheless, InnVentis combines with “Symbiotic Innovation” advantages of several models that have already proven successful in delivering value with the ambition to solve technical problems that result from the socioeconomic context, the relevant jurisdiction and the inherent complexities arising from different patent laws. In order to validate the business model and not the scientific context and rational approach to target specific pathways, a scientific context should be chosen that has a limited risk for failure, i.e. there should be little risk that no value will be created during the development process at all; in this context value is also regarded as high content data that eventually open up new avenues the development of therapeutic concepts and tools that target the pathologies covered by the biological pathways that are in the focus of this project.

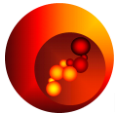
The biggest challenge that InnVentis’ novel concepts will face are a mental barriers and the natural reluctance against projects and business models with unproven track record. Yet, the authors are convinced that the evolutionary pressure on all participants in the value chain to a new medical product justifies already the exploration of alternative models to commercialize basic and industrial science. In fact, the obvious lack of productivity in light of the disproportional increase of investments word wide should encourage leaders in the field to engage in explorative projects that ultimately will deliver the knowledge and facts to build a better and efficacious business model. Last but not least, all new concept currently under development or in discussion must be regarded as “field studies” and are there not validate, even if they are funded by governmental or academic grant organisations.

Examples for virtual value growth models that use an open innovation platform:

<http://www.innocentive.com/>

<http://www.nature.com/openinnovation>

<http://www.trugenetics.com/> TrueGenetics is an excellent model how studies can attract hundreds if participants/patients for translational research projects via the web.



Introduction:

The pharmaceutical industry was originally based on a linear business model, that cannot address current challenges. These range from an overflow of data to ever increasingly complex drug discovery technologies; the latter need to be specifically adjusted to each single project to enable optimized research interactions between disciplines in preclinical and clinical research.

Today drug discovery and development until Proof of Concept (PoC), requires complex and iterative matrix processes for product development. The ever increasing cost explosion in light of decreasing productivity forces reconsideration of our approaches to value generation from science. To address these we will introduce “Symbiotic innovation”. Symbiotic Innovation builds on principles and experiences from Open Innovation; i.e. a project will be divided into tasks that will be posted on a web-based platform to enable the best solution provider being identified. Such a concept relies, first of all, on a new perception within the biomedical community and philosophy how value can be generated from academic-industrial web-build interfaces by the contributions from academic scientific leaders. In the current stage, also high penetration through media is necessary to attract solvers to a project. However, once established such a value creation model reduces cost, risk and time, by using existing resources, assembling knowledge leadership and reducing time to build infrastructure or negotiate collaborations, if a master solution can be identified. In addition, different from a single project posted on the www, this concept requires specific management task forces to optimally orchestrate the various vertical and horizontal interactions, between all solution providers, i.e. scientists in different organisations. Furthermore, the recently introduced concept of translation sciences, i.e. the interactive analysis of a therapeutic concept’s, study’s, or experiment’s validity and reliability in relation to human physiology or disease. This new concept poses additional complexities on the preclinical R&D process until Proof of Concept (PoC) in human disease, which must *a priori* interface preclinical with clinical research. Therefore new standards as well specific databases that re-evaluate data generated to date if they comply with translational sciences; we will term this discipline “Transcriptional Science”. Last, but not least, Symbiotic Innovations established horizontal and vertical synapses, that enable “collective learning”. These new teleologically established synapses often remain after the project is terminated and will thereby create new value generation interactions and complement the random collaboration development process, which remains important as a cradle for innovative ideas.

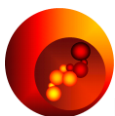
Symbiotic Innovation: optimized value creation by a web-based concept

The InnVentis’ Symbiotic Innovation model was generated from an “ideal world” vision basis, i.e. solutions which can be identified by applying only three criteria:

- If they optimally address a problem and not, if they are easy to implement
- Ensuring the best possible input of scientific leadership, in particular for new targets and increasing the chance of successful translation of a product to a safe clinical product
- Cost effectiveness, without compromising efficacy. The latter being defined as long-term sustained scientific value growth and an increased chance for a project to be translated to a therapeutic concept.

With respect to cost effectiveness it is obvious that the use of existing resources on an “as needed” basis is most effective. This can only be achieved if external services are used once the relevant task actually needs to be addressed. Partners for a given task are preferably academic leaders with their institution’s support, but could equally be a CRO or Biotech company. All partners are required to “invest” their know-how and resources in the project, which diversifies the inherent risk in a given project and reduces the costs up to 80%. In return they get instant access to unique resources; see below. InnVentis’ value creation concept will cover bare-bones consumables, with the support of a prime Sponsor. The latter will be a partner with an additional interest in the program, this would justify a basic financial investment and, if desired a right of first refusal.

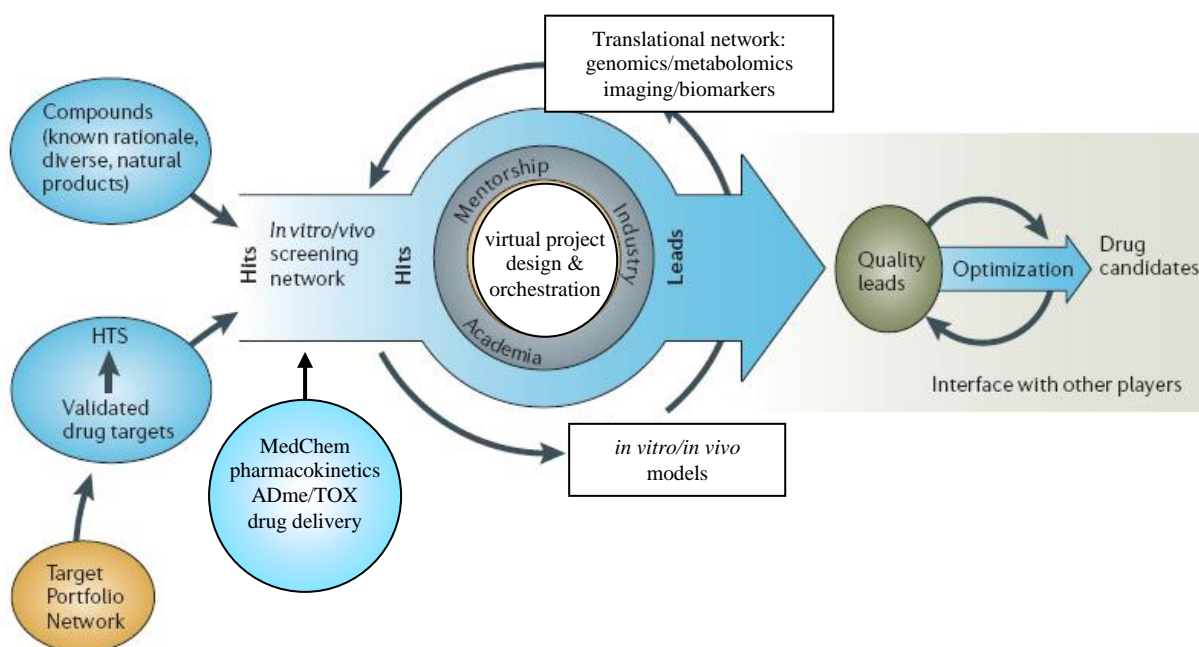
This concept is further based on the assumption, that for any problem in the value chain, there is more than one solution provider, i.e. leading expert - attracting these to become part of a virtual company, would only be possible from increased awareness and the internet, on the basis that a business



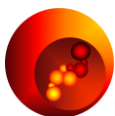
concept also considers the reward expectations of the relevant partner, i.e. CRO or academic institution. In general, InnVentis provides a reward sharing model, in addition to access to increasingly valuable proprietary databases and a competence network that allows collective learning as well as high profile research. Off note, Symbiotic innovation should also be seen as a commercial facilitator of high profile research, its goal being to optimally generate value from existing resources. It is different from internal initiatives like Harvard's Catalyst program by reaching out worldwide to attract leadership for each task along with a distinct value chain. The goal being to generate value from basic research and specific products, which are defined a priori ; i.e. knowledge, proprietary platforms and therapeutics.

In conclusion, virtual concepts using existing resources, combined with the knowledge of leaders in their field, are the only way to ensure high quality data, reduce the risk of failure and reduce or limit costs. Similarly, to ensure leading expertise in each occurring challenge, today a business model must attract that best 'solvers', and secure the best possible confidence in the database and experimental design used for contemporary translational sciences.

The following figure summarizes the virtual business and cooperation model (adopted from Nature Review Drug Discovery, 2006/5: 944; Innovative lead discovery: strategies for tropical diseases)



The initiative for tropical disease actually serves as an example, which proves that goal oriented collaborations between partners with seemingly diverging interests are possible, if common goals are identified early enough. However, such a business model needs to be adjusted for each single discovery program. In addition, in order to implement a project that also targets a commercial revenue, complex hurdles must be overcome with a creative approach that saves time and resources usually lost in partner identification and negotiations on fictive values of putative discoveries including those that may be generated aside the primary research and development program. Currently no such program exists and in order to implement it successfully, access to scientific leadership via public awareness will be key for such a pilot project. Therefore, InnVentis' value creation model, as a "proof of concept" field study, will need high media presence, to actually reach the scientists that should be attracted to participate until this kind of business model; i.e. a time, when scientists pro-actively look for opportunities to participate in drug discovery projects like InnVentis. Note, usually a company reaches out to experts to attract them for a collaboration, which eventually includes costly and time consuming negotiations with the technology transfer offices or business development of a given CRO.



Web-based platforms: changing the way academic-industrial interactions create value:

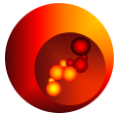
Symbiotic Innovation reverses the business development and partnering process by actually initiating a “competition” for participation in high profile projects offering a simple “take-it-or-leave-it” revenue sharing proposal. The attractiveness of the project is generated by the quality of the partnership and data for publication, but also by the facilitated access to resources, that enables a scientist to become part of a value chain with the option of a personal ROI - usually not accessible for academic scientists and their institution. In addition, usually collaborations between academic institutions are initiated by chance and rarely have a product as a goal. Becoming part of a project with a defined goal, like a therapeutic molecule, is a very attractive vision for academia. Based on internal calculations on reduced costs and improved value generation, any partner will be provided with a higher ROI than under current collaboration agreements, since the decreased costs, a higher chance for success and the shared risk, allows higher return early on. InnVentis’ revenue model allows the definition of the value partner’s to contribute and secure a fair distribution of the revenues generated. A more detailed project vision and background analysis is provided for download at www.InnVentis.com including scientific low risk kick-off project which addresses markets with unmet need, like metabolic diseases and inflammation; this draft-version will be updated based on the feedback gathered in interactions with opinion leaders within academia and the pharmaceutical industry. A reward model was recently applied for a start-up, where stock options for scientists that contribute academic work, actually showed sufficient motivation to invest their knowledge without additional compensation; InnVentis has developed other concepts that may equally serve all participants interests to generate, what they consider personal ROI.

Introducing Symbiotic Innovation:

In summary, while using lessons from Innocentive, i.e. attract partners fast by posting task/contract framework in WWW-based platform, a closed value chain, which will be managed by experts, generates NCEs, “Transcriptional Science” databases. “Collective Learning” in a modular business model based on “Open Innovation” experiences how to attract scientific leaders, that covers each step in the value chain will generate value for all participants in each individual project, with the anticipation that a sponsor/media alliance creates this new teleologically developed and truly innovative value creation concept.

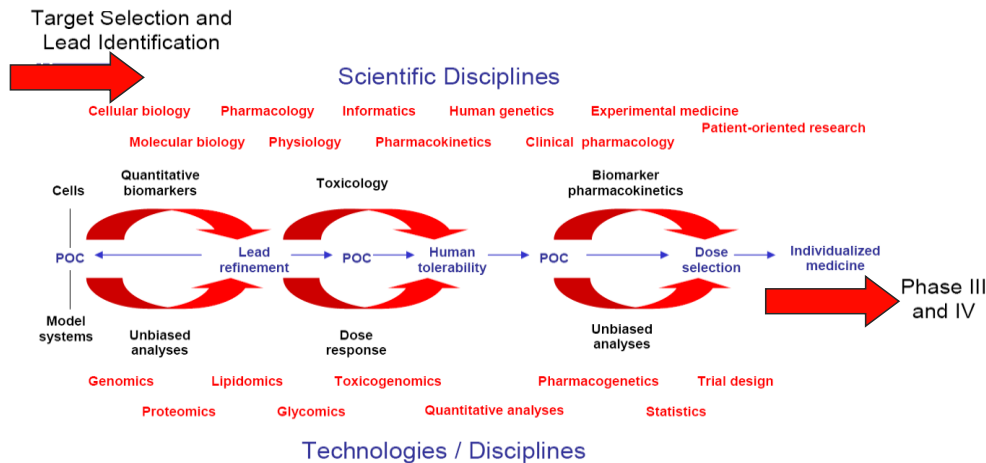
The assembly line (iterative-matrix value chain) will be managed by a team with converging expertise, adjusted to the projects specific requirements complemented with optionally having an on-site scientist, if required, to ensure compliance with industry standards and appropriate data quality.

Value is in this regard not only a new therapeutic molecule, but equally important, Transcriptional Science generates a specific High Confidence Data base (pathways, targets, diseases, compounds), which has been evaluated for its reliability and validity for human biology and relevance to understand and treat disease, i.e. if the data apply to the translational sciences’ paradigm requirements. The fact, that each collaboration goal is part of a value chain automatically increases the value of the project in a symbiotic manner, why we brand this business model as “Symbiotic Innovation”. See bullet points below for further description of the model.



Increased complexity requires matrix anatomies and *collective learning*

The number of disciplines in Translational Research forces a reevaluation of or current anatomies



Each approach to drug discovery may require an *individual specifically designed anatomy*

Problem-oriented knowledge management concepts must create networks that enable *collective learning*

Project teams (biology, drug design&delivery, medicine,..) must *ab initio* interact at each project level

Adopted from: FitzGerald (2005) Nat Rev Drug Dis 4:815

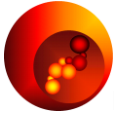
Translational Research - © Dr. Thomas Wilckens 9

Value generation is also secured, by the inherent quality control that will be generated by Big-Pharma or the Biotech Industry that are required to sponsor such a project *ab initio* and are now willing to adopt to an ever changing environment, appreciating the opportunity to participate in an ROI model, which is rather unique, with providing limited funding but resources, knowledge and experience. Off, note as an alternative patient organizations of philanthropy may sponsor individual projects.

Transcriptional Science: securing validity and reliability of data and enabling translational sciences:

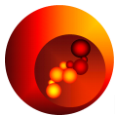
Furthermore, future drug discovery projects will need to apply translational science principles. Translational science does not only ask how a particular phenomenon can be explained mechanistically. It actually starts with the question, does an observed phenomenon have relevance to human disease at all? Obviously the data used for translational science, need first to be re-evaluated with respect to their reliability and validity to human physiology and disease. Thus, the new approach to biomedical research requires a re-evaluation of all data generated to date with respect to translational criteria, i.e. does the data reflect the system or experimental setting in which a condition is relevant to human physiology or a pathological condition. Thus, the emergence of translational sciences relies on data, which already complies with the criteria for translational science. Of course this is actually rarely the case. Translational sciences will rely on, what we call at InnVentis, the concept of transcriptional science and related databases (see below). This innovative concept generates 'high content confidence data' and actually helps to enable translational science. According to the recent research analysis data security and confidence constitute an essential prerequisite for successful drug discovery projects as well as a major hurdle to overcome.

InnVentis can provide a web-based technology platform that allows the implementation of transcriptional science; this means not only identification of publications that might be relevant for a project (like Google Scholar) and elimination of irrelevant sources. There is also the possibility to use semantic bioinformatics in combination with "manual" evaluation of the experiments, if they are relevant to the project in question. Furthermore transcriptional science requires repetition of experiments in order to re-evaluate their translational relevance, if the delineated conclusions are considered crucial for a given discovery project, but the experimental design may not match with translational criteria. This analysis, which will be generated in collaboration with partners, generates proprietary trade secrets and data, which will find entrée in proprietary databases and simulation models. This accumulation of high quality transcriptional content *per se* will generate an immense value for the pharmaceutical industry. A partner would have access to this database only as long as



he collaborates on the particular project, thereafter access will be provided on a subscription basis. Ontochem* InnVentis founding partner, provides the technology to enable the implementation of this platform.

Given the fact, that for some new targets, there is a paucity of leaders and experts available, the InnVentis approach also ensures that this deficit will be compensated for - therefore avoiding errors like those underestimated by Tegenaro. There is an obvious difference between the motivation to share knowledge as a consultant or shareholder of a virtual product with a different ROI opportunity.



Requirements:

Symbiotic Innovation requires a secure virtual data platform for internal and external blogs, discussion platforms, data storage and virtual technologies, like semantic literature analysis, as well as leading expertise in content management. InnVentis ensures its competence in an existing partnership with Ontochem*. Ideally a web-based technology also penetrates all emerging media, including twitter, etc. The details in implementation are complex and require management and business development experience with virtual projects, i.e. scientific managers and managing scientists.

Symbiotic Innovation essentially depends on a Media Partner to ensure that potential problems solvers are reached; compare Nature/Innocentive collaboration; i.e. the Nature Open Innovation Pavilion. Off note, during discussion with some publishers we identified Symbiotic Innovation to be an attractive revenue generation model, for publishers that support this kind of initiatives, given the many opportunities for virtual projects that emerge from our analysis and the current industry trends.

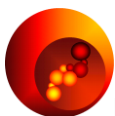
The InnVentis' value creation model for the biopharmaceutical industries, also requires primary Sponsoring Partners, which support the orchestrating of the project (legal, IP), complements the resources and provides the kick-off investment plus investments along the projects progress to cover consumables, management and business development. This can be complemented with governmental funding and public-private-partnerships; continuous support is anticipated from grants and patient organizations. The Media Partner and Sponsor receive a pre-negotiated share, significantly higher than all other partners. This will be in the range of a strategic VC investment, however, with a much longer commitment required.

A sponsor must be a company or organization with an added value and particular interest in the project, i.e. provide technologies or resources needed for the project. For example an IT leader interested in providing platforms for similar virtual value generation models as well as developing algorithms that identify relevant content that can be ranked, extracted and implemented in proprietary systems biology database related to a specific pathway etc. Alternatively a pharmaceutical company, that supports the exploration of novel models to optimally create value from science; the latter may negotiate a "right of first refusal" on distinct indications, which would be appreciated.

Summary and conclusion:

"The people who get on in this world are the people who get up and look for the circumstances they want, and, if they can't find them, make them." Georg Bernhard Shaw

InnVentis believes this accounts for business models as well. The pressure generated by the explosion of costs and data with even decreasing efficacy, forces a rethinking of current, sometime very cautious adjustments in the industry and also academia, some of which actually resemble the biotech business model that also failed. Similarly business models built on personal relationships may not necessarily ensure the best solution for a problem, equally with opportunistic syndicates being built to comply to new funding opportunities or clusters, that must find a common denominator, while Symbiotic Innovation starts from a common goal and product concept, searching for the best available solution for each task. The lessons of the past should generate support for an innovative goal oriented unbiased solution: Symbiotic Innovations' success will change the way academia and industry generates value for all stake holders in health care. Obviously one major challenge is finding entrepreneurial scientist project management, to optimally orchestrate this enterprise. However, the last decades has generated experienced and competent biotech leaders and as well as a new breed of pharma managers with a mentality, that find changing environments and constantly new tasks an attractive way to increase their own competence by constantly being exposed to new challenges.



Definitions:

Symbiotic Innovation (see also bullet points next page):

In contrast with Open Innovation, which solves a single problem attracting several problem solvers to a task posted via a web-based platform, Symbiotic Innovation establishes novel synopses between groups that would not identify each other and would not collaborate in a random context, since they would not necessarily identify their converging know-how and technologies. SI projects collaborate in a virtual network once the best leaders are identified for the respective tasks and results are kept secret as appropriate for the relevant project. For example, in a previous virtual company project the management established links between structure based drug design groups, chemoinformatics groups and molecular and cellular biologists in order to identify compounds selectively active at one single enzyme, which belongs to a novel target class, i.e. 11-beta-hydroxysteroid dehydrogenase type 1. This enzyme belongs to the short chain dehydrogenase family, that share a highly similar architecture. The new links generated various patents, publications and still continue their collaborations to date. Importantly, the synergies were identified by the management scientist, not the groups themselves. This way Symbiotic Innovation establishes teleologic networks that *a priori* generate an added long term value creation opportunity beyond the original scope of the primary project.

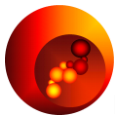
Transcriptional Science:

Transcriptional Science is a necessary prerequisite for translational sciences. Transcriptional Science re-evaluates older and contemporary data, if they comply with translational paradigms; i.e., if the experimental designs used, the data interpretation etc. have relevance for human biology and can support the identification of novel cures or technologies for health care in general. In consequence, Transcriptional Science also interprets data new within a translational context or even repeats basic studies, if they constitute an essential foundation for the initiation of a given drug discovery and development program. Transcriptional Science evolved from the identification of perpetuated errors and dogmas identified in the literature by analysis of specific topics and areas of research with data reaching back to 1939, that still impact decision making processes; i.e. the history of cortisol research, that missed essential target for cortisol causing cardiovascular diseases and contributing to other pathologies by not including an appropriate control and only using a synthetic analogue, for more than 80% of the studies (manuscript in preparation).

Collective learning:

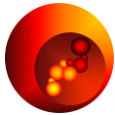
According to several innovation theories a critical mass of scientists, know-how and interactions between scientist is essential to generate innovation; in particular also interferences between technologies. Thus, during a teleological project, scientist from different disciplines will interact and continuously accompany the development of a given product, i.e. a therapeutic compound or medical technology. Being part of the value chain and with a ROI in reach, these scientist will continue to re-evaluate their hypothesis and data interpretation. Being part of a virtual team, they have an incentive to contribute their thoughts and creative capacities even to topics not within their core competence, which generates an interaction between scientist with converging expertise that solve problems in a concerted effort along the value chain. Innovation often happens at the interfaces between technologies. The knowledge generated will then be disseminated within the scientist's community and institution and further generate content and knowledge. Thus, this kind of virtual discussion and value creation networks initiate a creative brainstorming process from the generation and basic discussion of a project until the evaluation and development of the product concept in a real world scenario, which results in collective learning.

*About Ontochem (www.Ontochem.com): Ontochem's knowledge discovery is the non-trivial extraction of implicit, unknown, and useful information from databases and documents such as patents or scientific literature. These novel LifeScience specific text mining algorithms use chemistry specific ontology's and semantics in the chemical and biological space of interest, leveraging the rapidly growing, available information on compounds and biological targets. Data mining results (the process of extracting patterns from data) are transformed into useful and understandable information and finally into testable compound proposals. An integrated bio- and chemoinformatics toolbox blends small molecule compound design with wet-lab chemistry synthesis to provide faster and more efficient de novo drug discovery. This technology can be adopted to other fields for data extraction and validation, i.e. high content generation. Ontochem operates on a fee-for-service business model and



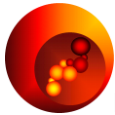
InnVentis: an innovative venture for health

offers it's services to the pharmaceutical and cosmetics industry. Ontochem has a unique track record of identifying compounds for new uses or scaffolds or leads for drug development.



Symbiotic Innovation advantages and solutions in bullet points:

- *Symbiotic Innovation* differs from essentially from open innovation, but uses some common principles and assumptions, such as web-based project posting and knowledge crowding.
- Symbiotic Innovation *a priori* constitutes a common denominator in a defined project that covers the value chain from preclinical to PoC in human disease. The project will be defined between a Prime Sponsor and the management team responsible for the project
- Different from cluster initiatives or some academic programs a common denominator is the starting point and must not be identified to attract funding or comply to a grant program.
- In contrast with a virtual institute, Symbiotic Innovation will create a new *anatomy individually and optimally suited for each novel project/target along the development path* incorporating the required technologies on an *as needed* basis; incorporation of successful partnerships repeatedly is certainly an opportunity, but should not replace the reach-out for leadership.
- Interactions with academic Virtual Translational Institutes with a particular core competence is desirable, in particular with respect to the application of translational science principles.
- Any single project will be divided into tasks, which are step by step posted at the internet in a interactive platform, to enables participation of leading scientist along the value chain.
- Symbiotic Innovation *reverses the business development* similar to open innovation concepts, by offering a “take-it-or-leave-it” mastercontract developed as part of this concept. Symbiotic Innovation, is basically a modular iterative virtual “company” based on a revenue sharing.
- Symbiotic Innovation orchestrates the whole iterative development process and will commercialise all value generated, which significantly facilitates the process of negotiations on IP generated during a certain project.
- Symbiotic Innovation creates new synapses along the value chain, which are often maintained after a project has been terminated; i.e. a structure-based-design group continued to collaborate with a group in a focus of a target family. Thus, Symbiotic Innovation ensures *long term value generation* from basic science, beyond the scope of one single project.
- Symbiotic Innovation ensures *continued input of scientific leadership*, which is certainly different if a partner is a shareholder rather than a consultant or contract researcher, which secures continuous challenging of the scientific rational of the project.
- Symbiotic Innovation fosters interaction between disciplines and technologies, beyond the scope of a single problem, which once more allows creative developments, since all scientists are participants until completion and stakeholders of the project as are their institutions.
- Symbiotic Innovation, creates sustained value, by concepts like “collective learning” and the implementation of “transcriptional science”, the latter addresses the need, to re-evaluate data the enter into translational science project, if they actually comply with this concept, i.e. if they have any relevance to human physiology; related databases will be continuously updated.
- Symbiotic Innovation embraces Sponsorship by Pharma companies and PPP-initiative, for each single project, since this is not a company but a value generation model, Symbiotic Innovation can be flexible applied by different groups with a common goal.
- In summary, Symbiotic Innovation provides an in depth analysis of current scientific and industrial needs, with the conclusion these can only be addressed with most creative approaches, that will require reconsideration of the way academia and industry see their role in the identification of new medical solutions, i.e. the creation of new dynamic anatomies, that allow flexible, fast and dynamic adaptation to “environmental” changes.



Addressing complex challenges in value creation from science to PoC:

Costs:

- Use of existing resources in academia and industry
- Compensation only of consumables
- No costs for legal advice; limited cost for contract matters
- Sponsor covers bare-bone cost plus managerial requirements: limited additional personal.

Quality control:

- Optimized management qualification to the requirements of the project
- Securing scientific leadership though attracting leaders in their fields, if necessary also conflicting opinions
- Technology bases which are in use, validated and certified in academia and industry
- Continuous project review by all participating stakeholders
- On sight scientist/project managers, if required by the complexity of the project.
- Flexible interactions with translational research centers
- Sponsor implements additional quality control and secures industry standard compliance

IP-management:

- All IP essential for the commercialization of the core product will ab initio belong to the virtual product; “belong” include guaranteed licensing by institutions that file the relevant IP under predefined terms.
- All IP generated will be maintained by the virtual project, that secures commercialization in collaboration with the tech-transfer offices.

Risk:

- All participants share the risk
- The individual risk is low, since basically “only” time invested can be lost
- Symbiotic Innovation allows fast adaptation to changes
- Projects can be terminated without cutting one’s own job, i.e. without inherent bias: Management must be secured with compensation by the Sponsor.
- Sponsor reduces vertical risk pushing and job cut discussions; i.e. reduced biased discussions
- Predefined project goals reduce the risk for academia not the obtain an ROI on research.

Speed:

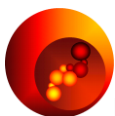
- No infrastructure must be built
- No time will be lost in negotiations
- Milestone can be addressed in parallel at different institutions

Flexibility:

- Fast opportunity to adopt to emerging technologies, scientific progress, emerging market
- Option to opportunistically explore novel indications (leads seeks application, develop diagnostic kit)
- Option to merge, adopt or terminate without jeopardizing infrastructure or jobs.

Long term value (alongside the prime product goal):

- Vertical academic synapses at technological interfaces; imaging-biomarkers, chemistry-cellular biology, etc.
- Dissemination of drug discovery experiences within academic institution
- Fostering more project orientated organizational measures and project approaches
- High ROI opportunities for academic institution
- *Ad hoc* interest in commercialization of IP
- Random collaboration arrangements will be complemented with product oriented collaborations
- Establishing new entrepreneurial visions in times of crisis and reluctance to take a risk
- Introduction of industry standards into academic research



Selected literature on the business model:

A better way to innovate.

HW Chesbrough

Harv Bus Rev, Jul 2003; 81(7): 12-3, 115.

Opinion: anticipating change in drug development: the emerging era of translational medicine and therapeutics. GA Fitzgerald

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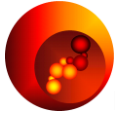
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