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Linking Drug Development with Translational Research

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ABSTRACT:
Translational research aims to make in-depth analysis from basic roots of science approach towards practical applications that majorly deal with the enhancement of human health and well being. In the pharmaceutical science, it deals full over approach to translate innovations by basic research to medical applicability and meaningful results towards it. The main aim of the review deals with the fact to enlighten translational based research approaches as a key component in stepping forward conceptual based approach to enhance drug delivery system. The review moves with the therapeutic innovation, modular work, description of recent setbacks in field of translational research as well as scope for future opportunities. The review led to the conclusion with the opinion in a way of optimizing potential of translational work for successful drug development.

KEYWORDS: Translational Research, Drug Development, Therapeutic Innovation, Modular Work.

I. INTRODUCTION:

Translational research enriches with the conceptual area to develop novel approaches to enhance the concept of drug deliverance in pharmaceutical world with the applications of practically adaptable basic science technical concepts. A general overview of linking of drug development to translational research is to" translate" basic roots of science approach towards practical applications that majorly deal with the enhancement of human health and well being. The major objective of linkage deals with the therapeutic innovation, practical real world application, iterative and learning conceptual techniques.

Nowadays, the concept of research based on translational studies is achieving to its critical importance in contemporary pharmaceutical research and practice. Arising of the fact of translational research as rapidly growing literature, attracting the attention of most leading pharmaceutical journals as well as arising as a centre of attraction to most of the several new publications. Translational research is being nowadays exploring as a leading prospectus in making an effort to biomedical industry and increasing central discussions to public health. Translational research in several ways has ability to detect its primary motive to the notion, certainly there exist many better ways to move on the research to practice in a faster way without delivering any affect to quality innovation.

This presented paper majorly based on highlighting the approaches that initiates the translational work over the phenomena of drug development. Here we rely on new synthetic step based analysis for the progress of drug development in enhancing research translation that is being consistent with existing approaches. The present article also signifies the key operational and measurable markers that posses the pathway research to practice and also moreover innovative approaches that helps out in understanding the less researched out as well as posses multiple dimensions constructions such as translational based parameters.

Translational research linking to the novel mechanism involves:

Research support system in reference with translational research for product development is shown in figure below:

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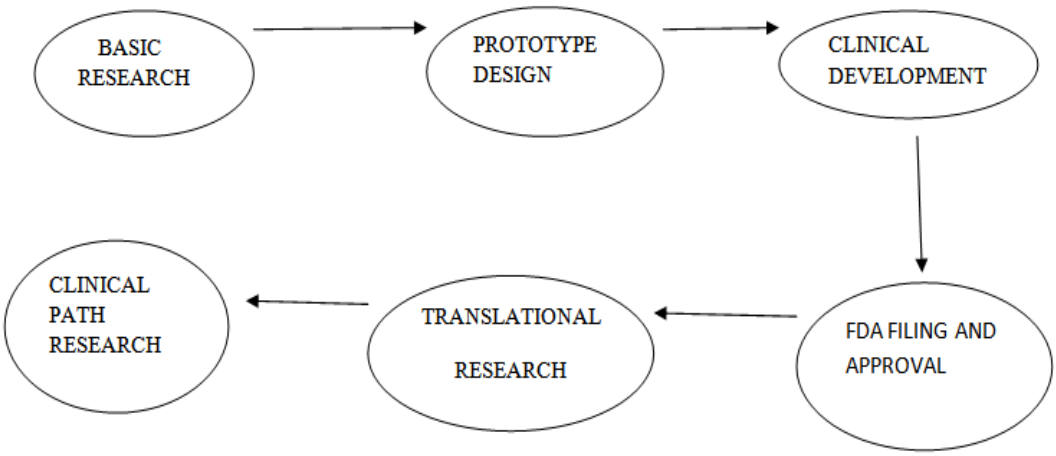
FIGURE1: RESEARCH SUPPORT SYSTEM OVERVIEW:



The essence of translational research roams over the fact efficient and effective conversion of biomedical knowledge into new and novel approaches over drug deliverance or in simpler terms we say medicines. Translational research incorporates all of the research activity from fundamental biology to the marketed drug. The key aspects of above captioned phenomena are:

1. Analyzing the biological basic concept dealing with human disorders.
2. Lead generation and optimization.
3. Clinical testing and safety, quality based and performance analysis.

Traditional approach deals with the concept of pathway from discovery to market, as a series of linear stages driven by single organization however this approach is being replaced in a faster way by more collaborative translational model. The arising novel modular approach has led to the formation of translational research organizations in order to build relationships between relevant criteria and thus facilitate medicinal research.

Translational research deals with the basic knowledge of biological basis influencing the drug development. The key parameters are:

1. Initiation of discovery over new drug targets.
2. Establishment of most innovative, easy going and experimental models for use in drug discovery.
3. Discovery which led to new biomarkers.
4. Plays a very efficient and important role in clinical trials including experimental medicines.
5. Ultimately led to the one of the most innovatory and leading approaches resembling drug deliverance concept.

TRANSLATIONAL RESEARCH MODULAR CONCEPT:

Translational modular features and characteristics help to clarify and operationalize useful measures.

1. One of the early specified model and straightforward framework regarding translational research was suggested by researcher Sung et al, who led to explain the concept with two phased concept that phenomenally incorporated with the blocks that exist in the pathway of moving from basic research to improved health. Description also carries forward for the barriers of translational research that is the assembling range from the insufficiency of the willing participants to the shortage of funding.
2. Another researcher Westfall et al, offer the most same but multiple phased model of translational research but with a different overview, as with dividing differently into separate phases. The first phase moves from basic research to human clinical based conceptual research, the second and third one carry over the phenomena of practice based research. In their second phase, the knowledge is moved from early clinical trials to use with patients in different phases through guideline development, Meta analysis and systematic reviews, and thus last stage involves translational to apply as well as incorporate dissemination and implementation research.

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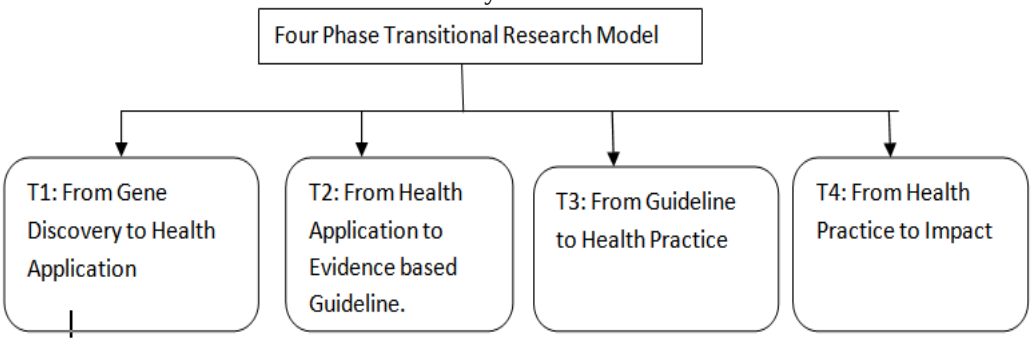
Practice based research conceptual analytical overview, phenomenally involvement denotes to the stream of translational research linkage to medicinal drug developing research parameters.

3. Dougherty and Conway et al, also offer the three phased model of translational research that has its step from basic roots of biomedical science as well as efficacy based clinical knowledge then also to the clinical effectiveness of the knowledge and ultimately leading to the improved health quality, value and to the prior health of the population.
4. The forth modular framework offering translational research Khoury et al, he led to research of four phased modular concept that make finer distinction of postguidline of translational research. Perhaps the critical feature of the descripted model is that the identification of forth phase that led to describe as the outcomes of research, simple description as the research that describes, interprets and predicts the impact of various influences especially interventions on final endpoints that matter to decision makers.

Translational research and relative effectiveness initiatory incorporation into the development of the drug based programs to specify the demands for more robust evidence generation to initiate the importance of drug development programs based of new therapies. The description of the above captioned modular version helps in enumeration of exploration of the phenomena of the research based on transitional concept in the pharmaceutical research and development sector.

FIGURE 2: Structural Framework of mostly used Four-Phase Transitional Research Model:



SIGNIFICANCE OF LINKING TRANSLATIONAL RESEARCH TO DRUG DEVELOPMENT:

The major significance that led to the exploration of translational research to the world of drug development is to led to the improvement of public health through better self analyzed assessments of chemical and drug safety while provides help in novel breakthrough medicines and diagnostics.

Basically involvement of transitional based research for changing the landscape of the development of the drug based sector field by aiming at the supportive and advance human system approaches based on biology basics to chemical safety promontory assessments.

Translational research based models helps in incorporating the commitment of understanding , analyzing the effective capability of the specified drugs which are used, which effectively results in the integrated efficient collaboration of or we may say linkage of translational research to drug development.

Opportunities which are bound for Pharma to participate in the research based initiatory approach that is ancillary to the core developmental research but which creates or improves the tools required to led to exploration of the fact that is, translational based research.

By the help of all the above captioned justifications related to the importance of translational research to the drug development program it is been proved that that with the increase in translational research concept, discovery of drug and development are being shifting and the new hubs leading for emerging as a optimized players to seek the pool expertization and to generate new conceptual therapies by linking translational concept with the drug discoveries with the translational concept as a active passage to unmet clinical needs.

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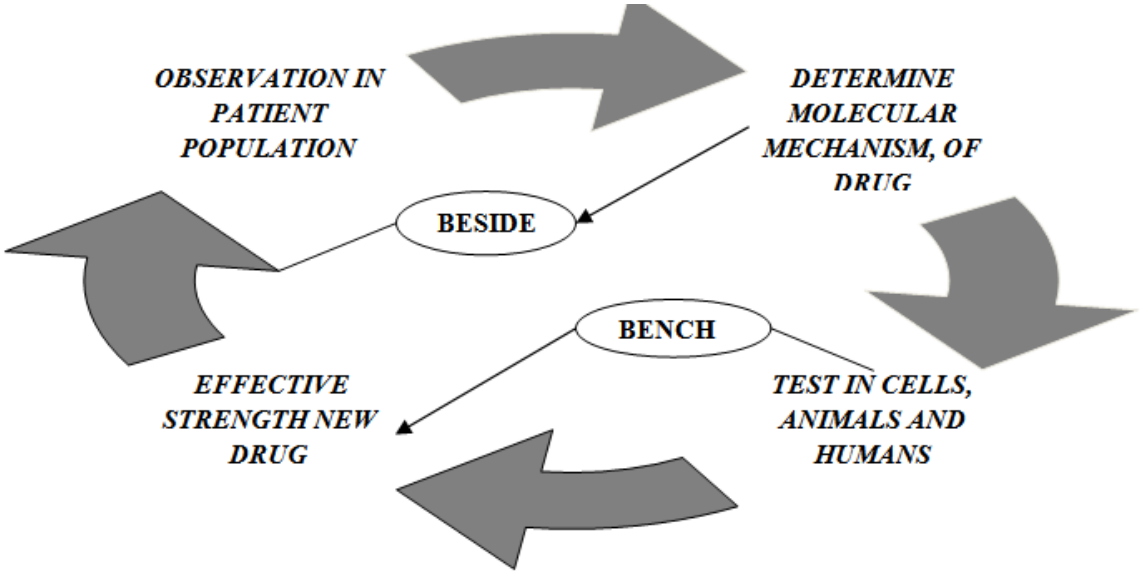
FIGURE 3: EFFECTIVE TRANSLATIONAL CYCLE MODEL FROM BENCH TOP BESIDE AND BACK AGAIN:



TECHNICAL BASED APPROACH OF TRANSLATIONAL CRITERIA IN DRUG DISCOVERY:

Translational research basically deals with the representation of one phase of the scientific community response to the slow rater of progress in producing new drugs.

The above captioned explanation deals with the major reason of translational research to be known as "From bench to beside and back again". Also considered as the more prior and optimized approach as the traditional one.

Technical based concept basically focuses on the designing drugs to act to a specific site respectively that bears the capability to direct linkage with the diseases. Apart from analyzing thousands of diseases, this concept majorly targets on yielding multiple hits, this approach starts with a single targets that haw been statistically linked to the clinical findings.

A drug specified, which has been descripted with a phenomena to act to the target site, may be helpful in showing its effectively in a high proportion of patients with raised levels of the targeted protein or specified molecule. This shift in the strategically analytical concept moves the field away from searching for blockbuster drugs that will treat all the patients with the specified and explorable concept.

FUTURE CHALLENGES AND OPPORTUNITIES:

One of the most exploring task led by the step of linkage of translational research to drug development is to change the paradigm of drug development with the optimization of the ongoing phenomenon with the incorporation of the major concepts of translational research, which ultimately get to the arisement of novel and far newer concepts of drug discovery with the effective parameter far more superior than the historical analysis.

There exist some more important challenges that need to be addressed as the linkage of drug discovery with the translational research led to more complex to communicate its basic research models that is the translational models. The more precisely operational stated definition are cumbersome.

Another major challenge coming as a stoppage in the of linkage is analytic in nature. Much of the phenomena modeling literature rely totally on descriptive studies. Many ongoing studies, researches are in the flow of time to deal with the major challenges that are coming forward in the linking of the translational research with the drug development, so as it help in building a strong base for the upcoming opportunities lying forward in the today's drug discovery world.

Some of the challenges and overwhelming strategies can be summarized as:

1. Validation of clinically useful biomarkers.

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2. Limitations exist in preclinical and clinical study results.
3. Some of the non scientific factors also exist as a major challenging path.

Over all the concern, the major opportunity and the vast challenging criteria lay between development of safe and effective new drug. The opportunity lies in the depth of research sector based on translational concept sector yielded important breakthrough in the basic parameters relating basic cellular and molecular biology as well as in producing novel technologies to advance drug development. Examples of this advancement include identification of gene in the human genome (the Human Genome Project), the initiatory usage of microchip-based robotics for fast testing large numbers of potential new drug compounds, and the creation of systems based on cell for large-scale synthesis of protein and antibody therapeutics. Nevertheless, these advances have not led to the surge in new drugs that was expected. This misbalance between scientific progress and poor productivity to have analysis over some of the overwhelming concepts of creating new drugs. Currently, it takes an average of 12 to 15 years to bring a drug to market, because the process involves sequential stages of discovery that we know as the preclinical development.

The aim here is not to be overly critical or negative, nor is it to overlap the exiting advances that are happening and concentrating too much on the shortcomings of translational research as it is practiced by novel today's researches. All steps that took forward in this concept should came in limelight, and society is wise to build upon these accomplishments. Moreover, when one scans the translational landscape it is evident that there are many pockets of excellence, where success outweighs failure and development of new concepts triumphs the difficulties. However, that being said, there is much anecdotal and objective evidence to suggest the enterprise is not operating at full speed, due both to inherent challenges in the process and to a set of problems that are self-induced . Eight distinct yet overlapping areas in need of assessment are listed below. This set of issues is not exhaustive, of course, and there are additional elements that should be explored further, the symbiotic relationship that occurs between academia and industry as a prime example. However, the topics listed below enlighten in many of the key difficulties in translational research as it is practiced today:

(i) Integration;
(ii) Modelular Systems;
(iii) Data reproducibility
(iv) Distributed power;
(iv) Mission;
(v) Clinical research;
(vi) Bureaucracy;
(vii) Selection of investigators.

Acknowledgment of the various down points in translational research is heard not just among those that will be put forward in science and medicine, but overlying the spectrum of the society. An article in Newsweek in 2010 illustrates the debate occurring in public forums, accurately describing many of the frustrations with the process amongst funders and patient groups bearing advocacy personnel. One imagines there will be many correct ways to bears the translational conceptual approach built in biological and medical knowledge to the public, depending on the specific circumstances and health care issues involved. Diversity and experimentation are good things—one size lays no importance. Therefore, instead of focusing on specific organizational structures or institutional hierarchies that might be useful in the future applicabilities, it is better to examine general principles and speculate on how they might to get experimented and led to the movement of concepts based translational studies. Importantly, the future design of translational research systems needs to be developed with young investigators firmly in mind. Their drive to succeed will be based on achieving specific goals—satisfy curiosity, produce new knowledge, engender societal good, personal financial benefit, honoring the verge of satisfaction, posses the major contribution to the society's economic development, as well as the pride of the inventors of the translational concept . Additionally, many of them will desire to be part of something bigger, part of an exciting environment they are proud to be associated with, a cool brand if you will. Tomorrow's leaders need to carefully consider what their organization stands for, how it operates, and why bright young folks would want to be involved. Integration (Silo Problem). When one asks investigators about challenges in translating new research advances into applications, a frequent complaint is the difficulty in traversing the various components of the system, disciplines and subdisciplines in academia, the laboratory, the clinic, and the public and private sectors, the so-called silo problem. Certainly, there are many positive aspects emanating from scientific and medical subcultures; silos are not all

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bad. However, when the biological or clinical problem at hand requires a multidisciplinary approach or requires the synergy of more than one discipline, the translational system begins to show its weakness—instead of whirring along productively, the virtuous cycle becomes slow and ossified. An organization or department populated by researchers from within a scientific or medical discipline provides a comfortable group with whom to discuss ideas, share excitement about new advances, obtain technical advice, and commiserate together when projects go badly. Moreover, congregation of like-minded investigators around a focused mission helps to promote productive specialization and a high degree of expertise in many fields, a process essential in moving science and business forward. In contrast, congregation n of unlike-minded investigators from across disciplines stretches everyone's understanding of science and medicine, provides different sorts of thinking and problem solving skills, and exposes investigators to materials and technological capabilities of which they were unaware. Such arrangements also promote work "at the edges," areas where subtypes of science and medicine overlap, a historically difficult yet exciting and often productive cauldron. Moreover, this environment provides ready access to theoretical and technical feedback, offering early-stage reality checks on ideas that transcend an individual's expertise—does this make sense? Both organizational structures have value, although the more usual is the former not the latter. Looking ahead, though, institutional environments need to be questioned more deeply. Is it better to create a new university or company department organized around a particular theme or discipline, physiology or cancer biology for example? Or is it better to build multidisciplinary departments and units—a biochemist, a physicist, a clinician, an engineer, a social worker, and a business expert? Would this be a more productive arrangement than a theme-centric department or division in academia or industry? Would this approach spin ideas more rapidly and efficiently through the iterative virtuous cycle, with input coming from multiple perspectives?One does see examples across the research community showing progress in this regard, at least to some extent. The establishment of Clinical and Translational Research Centers at institutions across the US represents recognition of the need for multidisciplinary environments that support the scientific activities and career development of translational researchers . However, these resources are typically provided atop a well-established silo system, as an attempt to counteract compartmentalization, so impact is somewhat limited.Looking ahead, nonsilo, multidisciplinary organizational structures built de novo from the ground up may be necessary to make progress on many diseases and is an area for future innovation. Although such environments likely will play a key role moving forward, one needs to be careful not to throw out the baby with the bathwater. Individuals pursuing their own ideas and passions will always be the lifeblood of successful investigation. Science by committee or by forced collaboration is rarely successful. A particular concern when designing an integrative environment is when a leader is selected based on success in a traditional silo, Chairman of Biochemistry, for example, who then requires researchers to follow those specific cultural practices, square pegs into round holes; this is a recipe for slow progress if not sure-fire failure. Big-tent leaders and big-tent environments will be essential.One way to encourage multi-investigator activities is to establish incentive programs that reward these efforts, understanding there is a natural inertia to "leaving the laboratory." There are many ways to accomplish this goal, for example, a royalty-based payment structure, somewhat similar to profit-sharing mechanisms used by many corporate concerns. In this scenario, a defined percentage of commercialization income is dispersed to everyone in a department as a reward for participating in an interactive and collegial environment. In other words, at least to a degree, "your success is my success and vice-versa." If an investigator has a commercial triumph it benefits all, producing income and funds to support infrastructure and training, thereby incentivizing efforts to help colleagues and mentor young researchers—one never knows when and how such efforts will pay off—a method to lubricate the virtuous cycle.In contrast to oiling the cycle, there is one aspect of the silo problem within academia that stands out as particularly pernicious, a concept akin to pouring molasses onto the virtuous cycle. Many in the research community agree the issue is particularly problematic and needs to be resolved, and sooner rather than later. Others are harsher in their assessment—worst idea ever. The concept is that an individual investigator can be either a basic scientist or an applied scientist, but never both—each person must stay in one silo or the other. An ingrained cultural academic credo accompanies this sort of thinking, often proclaimed loudly and in an

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authoritarian tone; "Everyone knows that basic scientists are highly superior to applied scientists since they are pure, noble, and unencumbered by the grubbiness of commercialization."What follows naturally is that doing applied science somehow lessens one's ability as a basic researcher and that less knowledge and breadth of experience is preferable to more. A hyper focus on one's primary scientific interest within a silo is said to be the only way to succeed. Never mind that the actual evidence is contradictory to this assertion, as investigators who are the most entrepreneurial remain productive with respect to basic science, produce large numbers of high-quality scientific publications, and are often the "superstars" of their fields . And never mind that even the most theoretical of academic scientists and mathematicians typically participate in a wide range of activities: teaching, mentoring, fundraising, grant writing, and departmental faculty matters to name a few. Participating in applied science and commercialization at a modest level, or even as a consultant, is considered disqualifying by many, rendering one impure, on the dark side, and no longer capable of performing high-quality basic science. A common accompaniment to this notion is that commercialization induces scientific bias due to financial incentives, a charge that is not necessarily supported by published studies on the influence of industry funding. And what of the other biases that exist in academia? Obtaining grants, being promoted, attaining tenure, publishing manuscripts, and personal recognition are all potential bias-inducing reward mechanisms. These too should be disqualifying based on the logic of the silo system. Clearly, conflicts of interest across a broad spectrum of activities are simply part and parcel of biomedical research. The remedy is not to shut down the system or abdicate the responsibility of helping patients and the public. Rather, the remedy is transparency, responsible oversight, and well-defined guidelines, features that should be emphasized in all translational organizations, especially when studies touch upon the clinic.To the uninitiated, the silo problem may appear as an amusing and somewhat silly aspect of human nature within the scientific community that researchers like to encase themselves into a silo and tell everyone who will listen why their particular discipline is better than others. But to the initiated this is a grave problem. Self-imposed compartmentalization. A highly ingrained, dogmatic, and cultural ethos passed down from generation to generation—stay in your silo, all other work is inferior, and commercialization is uncouth to boot.The outcome of this basic versus applied mentality, the insidious aspect, is that commercial and clinical applications become "someone else's problem." For many academics, simply doing basic research, generating knowledge, and publishing manuscripts is sufficient. Their day is done.But consider the effect of this scenario on the virtuous cycle. The people who best know the intricacies of a particular line of scientific inquiry—the creators, the discoverers, and the inventors—the key holders of information, both theoretical and experiential, remain on the sidelines and do not participate significantly in moving their work to patients and the public, based on a premise that is patently untrue, that human beings cannot multitask. From a first-principles engineering viewpoint, could there be a worse design flaw in today's translational system? The role of the most important element in the virtuous cycle, the creative individual scientist, the key driver of progress, is artificially diminished—their energy, drive, knowledge, and expertise dissipate away—and it is someone else's problem. In the future, however, this will not be someone else's problem. It will be firmly the problem of tomorrow's translational leaders, and a high priority at that. Model Systems. The history of science is replete with successful use of models. From early astronomy to quantum physics to understanding DNA structure, employing these systems to understand and predict physical phenomenon was and continues to be essential in science. In modern translational research, models provide experimental templates for making observations and testing hypotheses in the laboratory, an essential role given the complexity of biological systems and the ethical limits associated with clinical studies involving humans .Each of the many models employed in biological and medical research has its own strengths, weaknesses, and caveats; thus it is important not to overgeneralize and reach conclusions that are too broad . However, it is also important to critically examine these systems, since so much of what comes next in translational research depends on them.A particularly illustrative example that highlights both the value and the problems with models is the widespread adoption and use of in vitro cell cultures in biomedical research over the past several decades. Cells grown in the laboratory are advantageous in many respects since they enable a wide variety of molecular and mechanistic studies, are readily available, mimic biological phenomena, are inexpensive to obtain

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and maintain, and can be manipulated using molecular biology techniques to facilitate both basic and applied research.Cultured cell lines are particularly useful for mechanistic studies of individual molecules and specific biological processes. For example, they were essential in understanding the signaling mechanism and information flow that transduces external stimuli into events in the cell nucleus, such as altered mRNA transcription or DNA synthesis. In the laboratory, a model-centric, reductionist approach uncovered a remarkable stochastic cascade of events and elucidated the function of key proteins, how they are activated and inactivated, how they are regulated, and how they interact with each other. Moreover, study of cell types exhibiting varied and contradictory behaviors in response to external stimuli was useful in teasing out subtleties in molecular mechanisms. This basic information, detached from any useful application or medical intervention, represents human scientific inquiry at its finest—curiosity, discovery, hypothesis generation and testing, and ultimately new knowledge.There are no complaints here.The problem with cell culture models manifests itself at the second stage of inquiry, after the initial experiments in the laboratory are complete, when one asks more questions—how do these models relate to biological phenomenon on a larger scale, at the tissue, organ, organism, or disease level? What aspects are relevant to the system being modeled, often the patient, and which are not? Which findings represent true biological knowledge about how a molecule or process functions in nature?Alternatively, which findings are not real but are due to cells growing in an abnormal environment, plastic flasks, and thus mostly irrelevant to real-world biology and to the patient? Because an event can occur in an artificial culture system does not mean that it is important or that it occurs naturally. So, what is the wheat and what is the chaff? Here the translational system breaks down in an important and some would argue deleterious way—the virtuous cycle deconstructs, but more ominously, can mislead. An old joke often told by university professors on the first day of class is "Half of what you are going to learn is either wrong or woefully incomplete. The problem is that I do not know which 50% that is."When used to model a larger biological phenomenon, beyond a focused molecular event, in isolation, the same goes for cell lines studied in the laboratory.Notably, cultured cell models fit well into a silo-based research enterprise. This is both good and bad. On the one hand investigators never need to leave the laboratory to initiate and perform experiments, analyze data, publish papers, or advance a career—the messy business of traversing different scientific and medical disciplines is a nonissue. Inside the laboratory, the basic science-discovery aspect of the virtuous cycle hums along. On the other hand, though, the productive business of integrating multiple perspectives to understand models in their true context often does not occur—a major sin of omission. However, the problem is worse yet.Anyone working with cultured cells quickly learns it is possible to manipulate experimental conditions to generate varied, even contradictory results vis-à-vis a particular molecule or phenomenon, by changing the growth conditions or by selectively focusing on one particular cell line from the hundreds that are available. Inside the laboratory this is not problematic and is in fact helpful. Cells with different and opposing behaviors are scientifically useful since investigators can examine mechanistic events from multiple angles, irrespective of the relevance to the real world. But the applied science phase becomes even more difficult now due to this explosion of new information . Which of the myriad publications and data sets on a given topic are correct and worth pursuing? Which of the studies from academia and from early preclinical studies in industry are based on an accurate cell line model? Which findings are relevant to disease in patients? Nobody knows for certain. If the biological work using in vitro cultures over the past 50 years had focused only on the basic science aspect, fundamental knowledge as the sole aim, then concerns about the validity of the data produced would be minimal; new biological and mechanistic knowledge would be sufficient unto itself. However, this is not the case. Investigators have and continue to employ cultured cells as ostensibly accurate models of physiology and disease, true representations of pathobiology. They are used for drug screening to assess the effects of potential therapeutic compounds on normal and tumor cells; they are employed to advance basic science studies of physiology, to learn how and why a process occurs; and, they are utilized to identify new drug targets based on differences in expression patterns in normal and diseased cells.

RECENT SET BACKS IN TRANSLATIONAL RESEARCH:

The linkage of drug discovery with the translational research, various innovatory

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approaches has been made in the field of oncology dealing with DNA repair, monoclonal antibody treatment, and targeted gene therapy.

In the field of neurology, the linkage has bee made essential innovations being used in the treatment of Alzheimer's diseases,Migrane and pain , Nicotine dependence, Insomnia, Neural pain, Anesthesia , Focal cortical dyspepsia, Amyotrophic lateral sclerosis.

The linking concept of transitional based models with the drug discovery lays its commitment towards cardiovascular happenings also. translational medicine has been used less frequently in the development of cardiovascular drugs or in predicting potential cardiovascular toxicity of non-cardiac agents. Therefore, the challenge now is to translate the available basic science data into rationale use of this agent, particularly in that population of patients without metastatic disease. Advances also lay in the field of cardiomypathy also. Fortunately, the relevant pathways had been expressed in psoriasis lesions and many, but not all; of the intended therapeutics do have positive activity in patients with psoriasis. The currently approved biologic therapeutics mostly followed this pathway of discovery and implementation; while at the same time provide some new insights into disease biology. Future work should strive to learn more about the specific effects of new therapeutic agents on the human immune system.

The best wordings by eliciting writist: Our greatest glory is not in never failing, but in rising up every time we fail.

Nothing exemplifies the quote above from Emerson more than the translation of a biological discovery into a new drug, device, or other intervention that helps society. This is no easy task.The stakes here are high—human health and wellbeing; thus it is important that the translational system is critically examined and understood in order to maximize the likelihood that basic research performed in the laboratory and clinic benefits the public . Moreover, if positive economic activity is generated this strengthens the biotechnology and pharmaceutical company sectors, which in turn grows the scientific ecosystem large, ultimately making more funds available for research and training, creating high-level jobs, and increasing appreciation of the overall enterprise by the public .At the outset, it is important to recognize three important aspects of translational research as it is performed today. First, the system is not broken per se as there are many advances to celebrate, exemplified by the discovery, production, and distribution of new medicines, antibiotics to treat bacterial infections and insulin to manage diabetes as two classic examples which are wonderful success stories. Second, the endeavor is exceptionally challenging. This aspect should not be minimized. The undertaking is difficult and failure is frequent. It is easy to sit on the sidelines and find fault with the scientific research enterprise or specific translational components, but this is not helpful. What is useful is to honestly assess current principles and procedures and then to ideate and test alterations that will improve efficiency in the future. Finally, the fact that translational research is both important and difficult calls for and even demands a maximally effective system. In many instances, solving the biological and medical matters at hand will be problematic in the best of circumstances and straightforward answers will not be forthcoming. But the public and patients, current and future, need this process to work well; thus investigators need to be imaginative in the ways they pursue science that will benefit the public .What might translational research look like moving forward: Of course, predicting the future is always risky as there are numerous unknowns to account for. However, looking ahead, one might expect to see the formation of radical new organizations.

Optimized academia–industry partnership, where academia delivers trained researchers skilled in translational research and industry helps to sponsor those programs, consider alternative funding sources, reduce the cost of clinical investigation by decreasing unnecessary burdens, and increase public support for biomedical research spending could help alleviate some of these concern.

II. CONCLUSION:

Concluding part of translational research linkage with its drug discovery and development evolves and matures with above fruitful discussions joined in the manuscript above. Academia and industry led to the generation of pace with which they pursue collaboration that delivers meaningful results.

In the above manuscript we identify number of factors that responsible for the linkage of drug discover with its development:

1. With respect to drug discovery and similar core research, Pharmaceutical sector will need amplify their traditional conceptual parameters to take on a much more direct collaboration

with academia, especially with respect to how academic research phenomena is perceived and how the different expert6ise optimization activities sets of the two can best complement each other.

2. Opportunities abound for pharmaceutical sector to participate in research that is ancillary to core developmental research but which creates or improves the tools required to promote translation
3. As academia pursues the concept of development further down the pathway, The research sector will need to reassess its position on how it manages risk and supports research at earlier stages than traditionally ongoing concepts , which will require to consider new ways of sharing commercial rewards.
4. In particular, as the lines which crosses the developmental pathway become to carry over between academia and industry.

These above listed factors constitute the most critical issues highlighted for he translational research linkage with the drug discovery and development. Industry players would find competitive advantage by responding to the opportunities translational research offers, especially within the evolving role of academic medical research. Collaboration has been shown to be the key theme in surmounting the challenge, and the discussed factors we have outlined form the core of what future collaborations should look like. Above all, by establishing mutual respect among all researchers engaged in collaboration between academia and industry, for the exploration of the linkage of translational based research concept with the drug development the path is prepared for identifying and pursuing potentially exciting new medical challenges firmly awaiting for the researches.

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