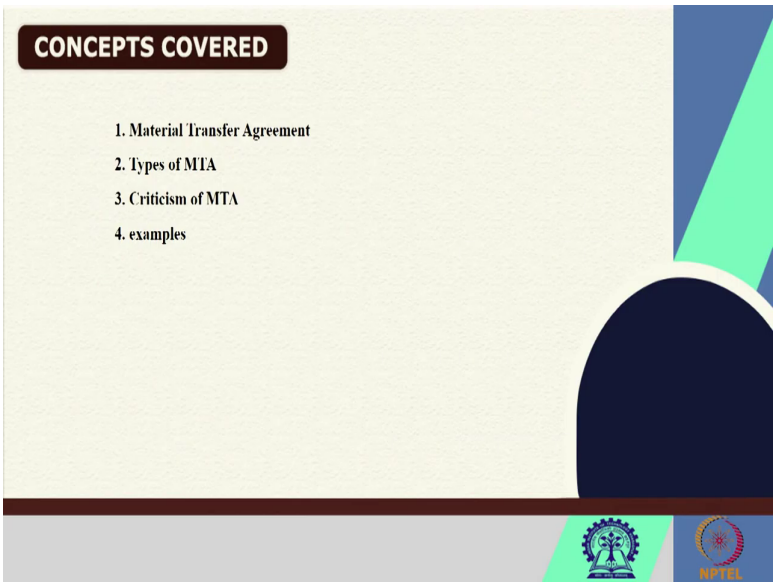
Legal and Regulatory Issues in Biotechnology
Prof. Niharika Sahoo Bhattacharya
Rajiv Gandhi School of Intellectual Property Law
Indian Institute of Technology, Kharagpur

Module - 04
Technology transfer in biotech sector
Lecture - 16
Resource Sharing: material transfer agreement

Hello all. I welcome you all to the 4th module where we will be basically dealing with the Technology transfer in the biotech sector. So, in this module we will have a broad overlook into how the technology transfer process happens in the biotech domain and what are the critical aspects in this technology transfer; starting from the resource sharing to the licensing negotiation and the relationship between the biotechnology licensing agreement and the intellectual property protections.

So, in this lecture, I will start with the Resource Sharing and the material transfer agreements.

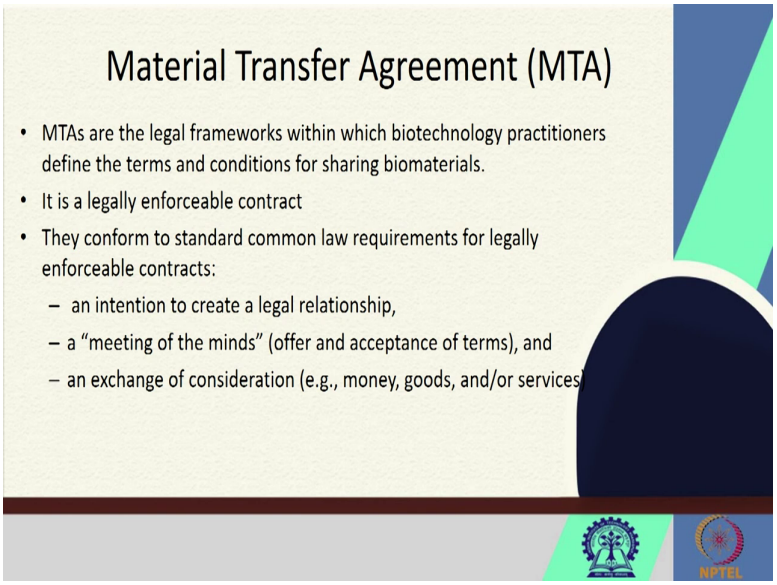
(Refer Slide Time: 01:08)



So, here the concept which we are going to cover is the notion of the material transfer agreement, different types of the material transfer agreements and what are the current criticisms or challenges with respect to the MTAs. And I will also like you to give certain

examples how with the change of time and change in resources and technology the MTAs are also changing.

(Refer Slide Time: 01:33)



So, if you see this material transfer agreement which is basically nothing but a contractual agreement between two parties where they transfer the resources; biological resources. If we look into the history of resource sharing then in 1970s or when the recombinant DNA technology has just been developed that time really, we do not have much botheration about what kind of material is being transferred and how the future research would be going to.

But, at that time the biological material whether you say the plant germplasm or any gene stock were easily shared among the researchers. Because, at that time it is more of research, but the situation changed gradually when researchers or private entities they started seeing potential, commercial, application of those technologies and like benefits from using those biological researches.

Then, after particularly in the health sector where gene or a plasmid or many diagnostic tools or a sequence protein sequence, different types of resources were there which may have potential application in the health care and which may give a lot of business to the entity. So, all these has triggered that the material transfer agreement should be done in a proper way so

that the proprietorship or the ownership over the invention which is carried out either by the use of those materials or either through those materials can be properly settled.

So, in this regard material transfer agreements have started. And if you see it is defined as the, a kind of a legal framework within which the biotechnology practitioners define the terms and conditions for the sharing biomaterials.

So, maybe possibly some institute has developed a kind of a plasmid which you need to carry out your own research. Then, in order to avoid the duplication of the work or in order to avoid the potential infringement upon somebody's intellectual property right you need to have permission. So, this permission or this sharing can be done through a formal agreement.

So, it is a kind of a legally enforceable contract where both the parties agree to certain terms and conditions and the provider or the person who has the resource agrees to share the resource with the other entity. So, this can may take place between any government or public institution, like two between two public institution or between a public and a private body or from the private entity to the other private body. So, it may happen between any two parties.

And, since it is a legally enforceable contract it meets the requirement of certain common law requirement of the contract. Like, there is an intention to create a legal relationship where you are agreeing the terms and condition how you are going to use the material or on for what purpose is it exclusive or non-exclusive or who will have these future rights over the invention.

So, all these intentions are written in the form of a legal document and there is meeting of minds. Means, there are certain terms and condition like what is the condition for offering that material – is it with basis of certain money or any other consideration.

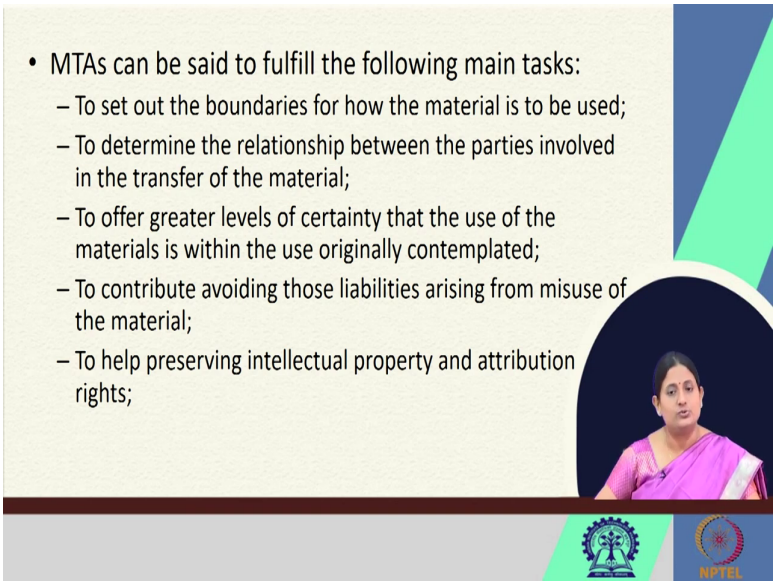
So, the offer and the acceptance terms have to be agreed between the two parties. And there is an exchange of consideration like it may be money in terms of any other goods or any other services. So, all these requirements have to be met in or before a material transfer agreement takes place.

And, in case of biotechnology research this material transfer agreement is more so important because as we have been discussing, whether you say a biopharmaceutical or whether you say any biologically derived product it may be the amalgamation of number of inventions.

So, there are number of steps associated with the development of a product or a process and you need lot of research tools, you need lot of again involvement of the biological material; like plasmids, DNAs or proteins. And, after the bioinformatics and other genetic tools have been developed you as a researcher also need the help of those tools as well.

So, to carry out the biological research for the development of a particular product you need to have lot of inputs which may not be possible for a single entity and you need the help on the resources from the other individuals. From that reason this material transfer agreement becomes very important for the biological research purpose or the biotechnological research particularly.

(Refer Slide Time: 06:51)



So, if we see the material transfer agreements have a function for particularly defining the boundaries how the material to be used. That means, maybe there is a plasmid or there is any other protein molecule which can be useful for suppose development of a cancerous medicine which is useful for the in case of adults. And, that same thing can also be used for the pediatric purpose also.

So, whether or not you want to use the same thing for both the pediatric as well as the normal adult medicine or only for animal research or human research, those conditions have to be spelled out particularly. So, it is up to the resource provider who can set the boundary and obviously it has to be agreeable by the other party as well. So, these MTAs are the legal document where the boundaries of the usage of the material have set out.

Then, it also helps in determining the relationship between the parties involved in the transfer of the material. So, which conditions suppose is it for a product development, is it for only research purpose; what would happen what would be the consequence if there is a publication. So, all those issues may crop up. So, what kind of relationship or what kind of negotiation should be there between the two parties; is also defined by this material transfer agreement.

And, it offers a greater level of certainty that use of this material is within the use originally contemplated. So, this legal document is evidence or a proof that the permitted usage or the boundaries are already set. If someone is exceeding those boundary or not meeting the requirement then, it would help in solving those issues. So, it is basically a kind of an enforceable document. So, the parties have to be careful about how the product has been used.

And, it also contributes in avoiding the liability arising from the misuse of the materials. So, it may be possible if there is no formal document or there is no contract between the parties how you are going to use the material and if there is a misuse of the material no legal action can be taken. So, here with the help of this MTA, because it is an enforceable document, legal liabilities are associated with it. So, the misuse of the materials can be prevented.

And more importantly it helps in preserving the intellectual property and the attributed, right. So, when we are carrying out certain research and particularly in the biological research, in each step it may lead to development of certain invention or development of certain intellectual property rights like associated intellectual property rights. So, this MTA would be a kind of a template where the terms would be clear means who will have the intellectual property right.

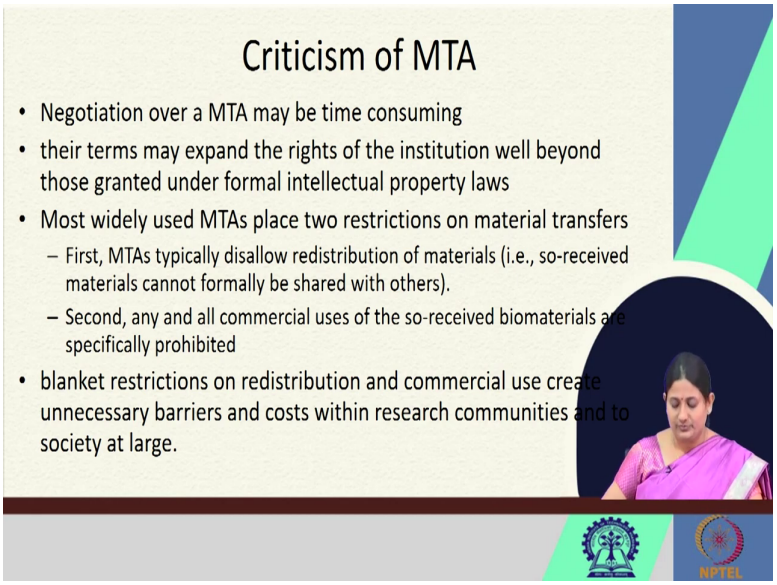
Suppose if I have used your resource in carrying out my experimentation and I am now able to file for a patent, then would that resource provider can claim like inventorship or can be the assignee to that thing. So, those things should be made clear and should be all like made clear before you take certain materials.

So, this makes MTA agreements therefore very essential in the biological research. Because, you know what happens in the pharmaceutical domain particularly, when a lead molecule is being discovered or being found out you are not sure whether till the end of the clinical trial that lead molecule would be able to be developed into a potential drug molecule or not.

So, still they keep on researching and there are number of molecules which are taken together. Finally, one which is most effective or the safety studies has been conducted properly have been chosen. So, but in each step the researcher wants to have an intellectual property right maybe in terms of the patents or a trade secret so that in future if those technology can be useful for any other purpose as well.

So, that is why in biological research or biotechnological research the preservation of the intellectual property is very important. So as, so all these dilemmas or the problems may be resolved at the very beginning before even you start doing your experiment when you are taking resources from certain other organize organization.

(Refer Slide Time: 11:53)



So, MTA so far is an legally enforceable document and very essential when we are securing or you want to have the biological resource from any other organization.

However, it has been seen that the MTAs are not always favorable for the research. Particularly in the United States after this Bayh–Dole Act which basically allowed the public funded institution to commercialize the inventions or commercialize the product of their research which has been carried out through the public funding. So, everyone started to like sharing the resources or transacting with their invention or licensing their invention.

And, during that time lot of MTAs are also been like carried out, like it has been studied that leading US universities they do 400 to 2000 material transfer agreements per year. But it has been found that the negotiation over the material transfer agreements is mostly time consuming. So, what happens in bigger public funding institutions they have a separate technology transfer organization. So, since it is a kind of a legal document so, this TTO takes care of the MTA.

But again, when the MTAs are read from the perspective of a researcher and the from the prospective of a legal person who is dealing with a contract and does not have that background, it might be little bit different and the things would not be so smooth. And, further reaching out a consensus where both the parties should agree to the terms and condition is also a difficult task.

So, this negotiation process generally takes a long period of the time. And that creates a setback for the researchers because there is a delay in procuring the material and then carrying out the research. And, further what happens the conditions which are generally set under this MTA agreement are beyond the granted intellectual property laws that. It is not about only the patents or the copyright or the other things, but sometimes it is associated with lot of know-hows and the trade secrete also.

And, what happens because it is a broad understanding, so even if, there are certain things which may not give you a big result or a big breakthrough which can be commercialized but still with the hope or because it is a template everyone would try to enforce lot of clauses; and it becomes difficult there to negotiate and move on with the MTA.

So, if we see the most widely used material transfer agreements they place basically two kinds of restrictions on the material transfers. First, it typically disallows the redistribution of the material. So, if I am receiving some material by an MTA then I cannot distribute or share that material with others formally. Why? Again, the same questions of IP or other commercial success may be involved.

So, that is why in general the MTAs do not allow the redistribution of the material. Second, any or all the commercial uses so received biomaterials are specifically prohibited. So, you are only allowed to carry on with the basic research, you are not supposed to do it for the commercial processes. So, those things are also particularly prohibited.

So, what happens, this blanket restrictions for the redistribution or for the commercial use it creates unnecessary barriers for the researchers and for the society at large. Because, there may be some good technologies or there may be probability of developing certain very good potential breakthroughs or there might not be. So, but again we have a blanket restriction. So, as a whole it is seen as a hindrance or a barrier for the from the research angle.

(Refer Slide Time: 16:25)

So, if we see many of the research articles in this domain have pointed out that there are five basic threats to the innovation from these MTAs and particularly with the field of the biotechnology. 1st this MTA somehow withheld the materials, because it does not allow the

redistribution and even it what you call it poses a long negotiation; it requires a long negotiation process to get hold of the material. So, generally it is regarded as something which is withholding the material.

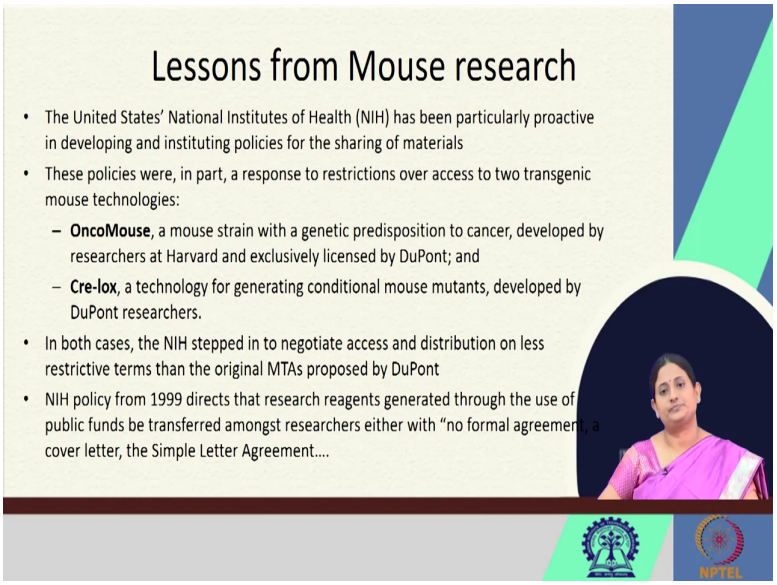
Then, it forces you to abandoned the different research lines which you might have developed by the use of the biological research, because again you are not supposed to recommercialize or again redistribute. So, many of the things may not be possibly used by the same researcher. And there are potential delays in the receiving material maybe due to the clause, between clauses put in the MTA, maybe due to the other formalities associated with the MTAs.

And, in many times there are publication restriction. For example, when the research is in an academic institution setup. So, in an academic institution the output of a research is generally published and at the same time we go for the protection of those outputs in the forms of the different intellectual property laws.

But, in case of the industry; majorly they do not want to publicize any of the research. Because they think if any clue can be from this research articles if somebody or some competitor might get certain clues and then they might develop the competitive or the competing product. So, private individual or commercial entities they do not really allow the publication in majority of the cases.

So, the publication restrictions are one of the majorly encountered issue with respect to the MTAs and there are associated harms, like we said not redistribution and other associated delays and things may happen. So, MTAs even the very necessary for the biotechnological research, but still, it might have certain consequences to the overall impact of the biotechnological research.

(Refer Slide Time: 18:51)



So, this has been inferred through various practical issues which has taken place in the past. So, particularly the issue which the National Institute of Health faced while acquiring the mouse lines. So, like the National Institute of the Health which is very proactive in developing various policies or various materials various policy and various documentation for sharing the materials.

Like this is the result because the NIH some time back faced the issue with respect to these MTA agreements. And at that time with respect to these two transgenic mouse technologies like one is the OncoMouse technology where a mouse strain with a genetic makeup where it is very prone to cancer were developed by the researchers of the Harvard University and those techno and that OncoMouse technology for that OncoMouse was transferred exclusively transferred to DuPont.

Now, when the NIH wanted to have that OncoMouse from the DuPont, DuPont had given a long list of clauses for the material transfer agreement. Similarly, the second issue was with respect to another technology which is known as the Cre-lox. And this is basically again a condition in the mouse which is the done by the mutation and useful for cancerous; cancer research also.

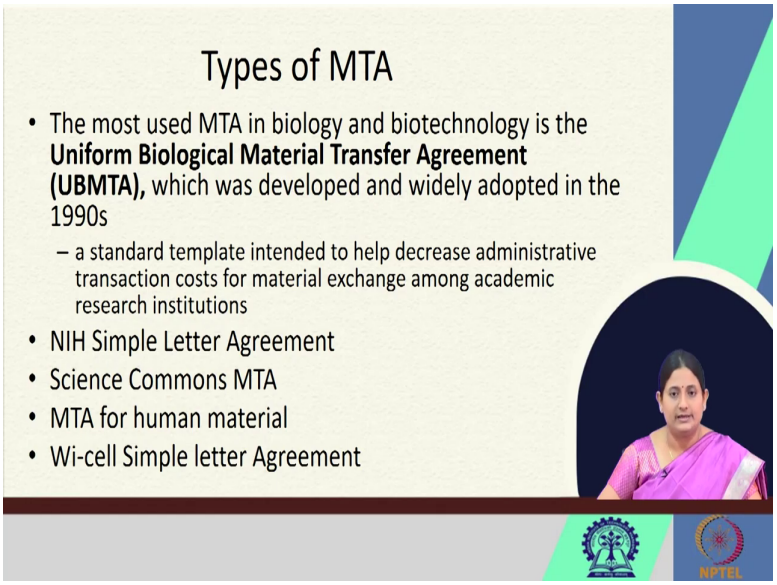
So, there again the DuPont researchers have developed this mouse where muted and the transfer of this or sharing of this mouse variety were also under various what you called criticism.

So, what has happened; in both the cases the NIH has stepped into negotiating and basically on the aspects of the access as well as the distribution of this material. And, the NIH wanted to have a very simplified form of the MTA, because NIH is one of the prominent research or not organization like it controls all the research organizations.

So there, it basically hopped on the fact that if there are a lot of restriction or a lot of clauses where it somehow restricts the research, which is basically done in a public interest, then it is not good for the society. So, at this time, so NIH was the first agency like which stepped in and laid out a few formats in which the material transfer agreement can take place.

So, the NIH policy from 1999 onwards it directed that the research reagents which is generated through the use of the public funding should be transferred to the other researchers either with no formal agreement or simply by a cover letter or by the simple letter agreement. And, accordingly NIH has developed different formats in which the material transfer agreement can take place.

(Refer Slide Time: 22:09)



So, if you see the NIH formats [FL] the most widely used format for the material transfer agreement is the Uniform Biological Material Transfer Agreement or the UBMTA. And it was developed during that period of the time that when the OncoMouse and the Cre-lox mouse technology transfer was happening.

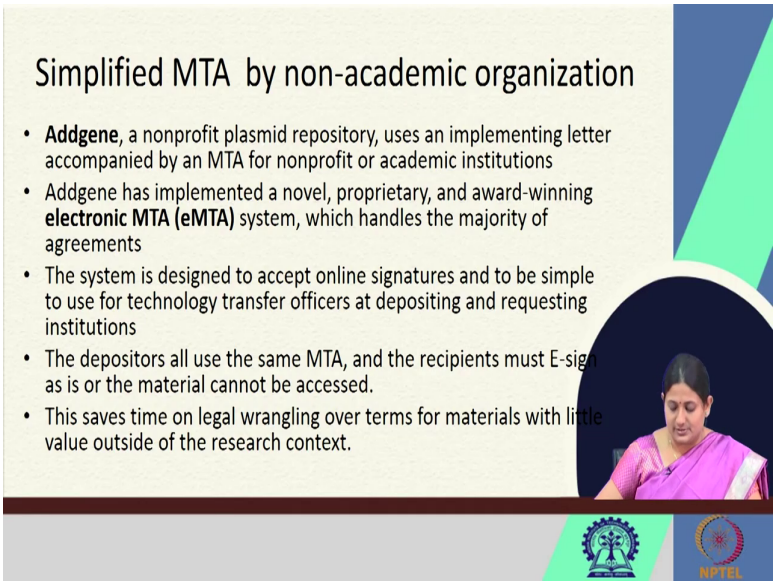
And, basically it is a standard template which is intended to help the decrease the administrative transactional cost for the material exchange among the academic research institution. So, it provided a format where all the public research institution can use and acquire the material. So, since it is a common format there is no dispute and research institution readily agreed to use that one.

Apart from that and it has the simple letter agreement, then it has the science commons MTA, then MTA for the human material. And also, there are different formats available in that site like the Wisconsin cell simple letter agreement.

So, basically these are all formatted, like who is transferring, to whom it was it is transferred, what were the conditions under which the things can be used. So, a basic template has been given and the institute has to put on their details and accordingly the negotiation can take place.

So, this development has helped many research institutions to secure the materials from other research institution and carry out their biological research.

(Refer Slide Time: 23:45)



So, even though we have a set of templates available from the NIH again we have the various non-academic organization who have tried to develop some simpler material transfer agreement. For example, this edge Addgene, which is a non-profit plasmid repository it uses implementing letter accompanied by an MTA for the non-profit or for the academic institutions.

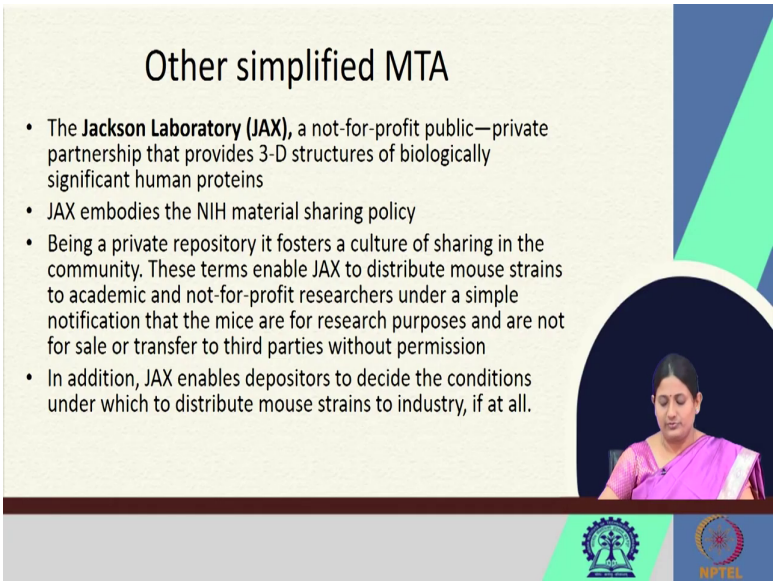
So, this MTA was an award-winning technology. So, what is it called is electronic MTA? Electronic MTA system which is very easy, because it is in e-format it is very easy to sign; get it signed by the respective authorities or agencies where transfer is happening.

And, the system is so designed that it will accept the online signatures and it is very simple to use and the technology transfer offices would face no problem in depositing or requesting the other institution. And, all the depositors who are depositing the various plasmids in that repository will use the same MTA and they will E-sign. So, that the material can be exit apart from that without e-signature it cannot be processed.

So, because it is e-procedure so, it has smoothened the whole process of transaction. So, it saved time and also it was helpful for easily taking care of the legal materials over the transfer of the material and which is again other things which is associated with that. So,

Addgene was the first one to develop this eMTA system which is now proving to one of the simplified mechanisms.

(Refer Slide Time: 25:35)



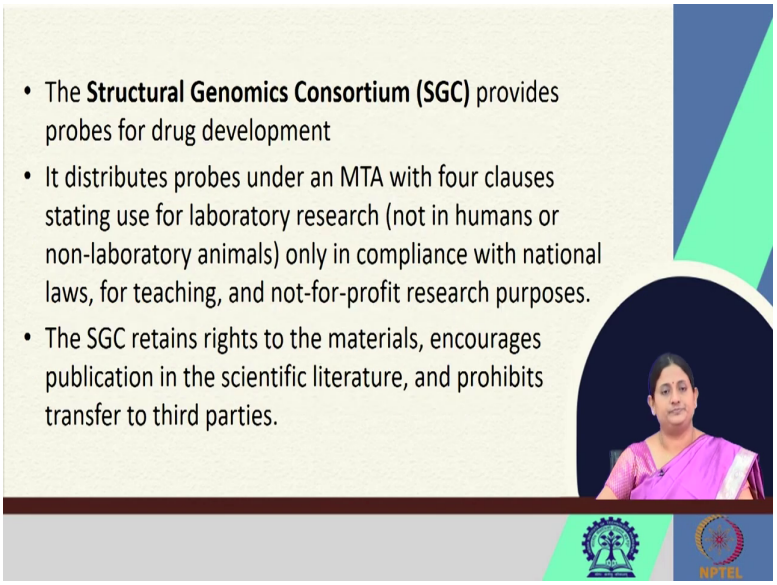
Apart from that, various private entity has also developed lot different kind of template for the material transfer agreements. Another a notable example is the Jackson laboratory or the JAX which is called. So, the Jackson laboratories is a non nonprofit organization public private partnership and it provides the 3-dimensional structures of the biologically significant human proteins.

And, if you see the Jackson laboratories it uses the NIH template for the material transfer policy. However, it again has what you call a certain terms and condition which is helping out for more research which would be helpful for the community. So, it is basically fostering a culture for the sharing of the material.

And there are different terms like which enables the Jackson laboratories to distribute the mouse strains to the academic as well as non-profit researchers under a simple notification; that the mice are for the research purposes and are not for sale or transfer to the third parties without the transfer; without the permission. So, it specifically mentions that all the materials which will be transferred will be particularly used for the research purposes and this cannot be sold or transferred to any other party without any permission.

And, then it allows the depositors to decide the conditions under which the mouse strains can be transferred to industry if at all. Basically, it gives the simple mouse strains to the research organization in simple term, and if any industry requires that thing then the terms and conditions can be set out by the individuals or the depositors. So, this is again one of the notable examples.

(Refer Slide Time: 27:39)

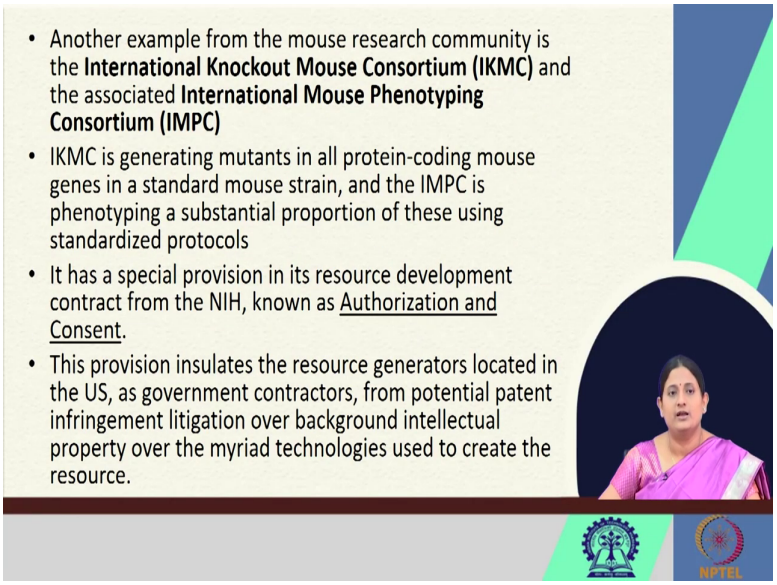


Another name in this MTA development is that structural genomics consortium or SGC and this is a repository again which provides the probes for the drug development. And it distributes the probes under the MTA and there are four specific clauses.

First it states that all the probes should be used for the laboratory research not in humans not in animals, ok. So, that is quite clear. And, it should be used only in compliance with the national laws and for teaching and for non-profit research purposes.

And, the structural genomic consortium it retains the right to the materials, encourage the publication in the scientific literature and prohibits the transfer to the third parties. So, the issues which the normal MTA faced with respect to the publications or other issues were now dealt here by the new MTA developed by the structural genomic consortium.

(Refer Slide Time: 28:46)



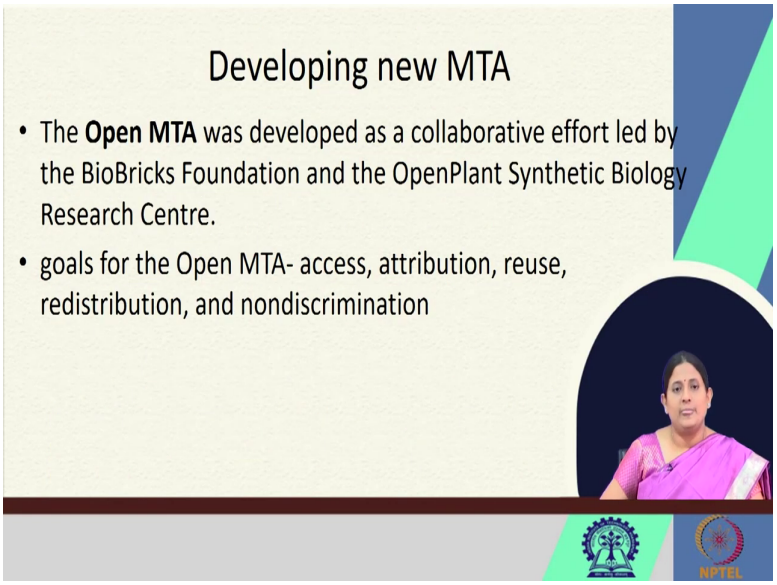
Further examples are this International Knockout Mouse Consortium or IKMC and there is International Mouse Phenotyping Consortium IMPC; and both this IKMC is generally is involved in generating the mutants in all protein coding mouse genes in a standard mouse strain. And, the IMPC is basically phenotyping the substantial portions proportions of this using the standardized protocols.

So, both of this organization have now adopted the standard UBMTA protocol from the NIH, but again they have a special provision which is known as the authorization and consent form. So, what is this authorization and consent? It is basically, a kind of provision which insulates the resource generators who are located in the United States as a government agency, they should be insulated from the potential patent infringement litigation.

So, in this sharing basically what happens, is this kind of sharing mechanism the resource generators or the other person they are kind of immune from any patent infringement issue.

So, this is a successful model in United States, because again patent rights are jurisdictional. So, if something has been covered under a patent in the United States and other party is using that then they may be like immune from their potential infringement. But again this model even though this IKMC and IMPC has also branches in European Union, but this model is not successful there because of the very nature that the patents are jurisdictional in nature.

(Refer Slide Time: 30:39)



So, as I was, mentioning so, these are the all this recent development with respect to the MTA means from the standard template where lot of restrictions are posed particularly in the biotech domain keeping in view that, something might develop into a very successful product or it may be commercially successful product or it may be used as a research tool which may help in developing a new product.

So, with those thinking the MTAs are generally made. And, but since again various research have shown that these MTA may be little bit problematic while carrying out the research.

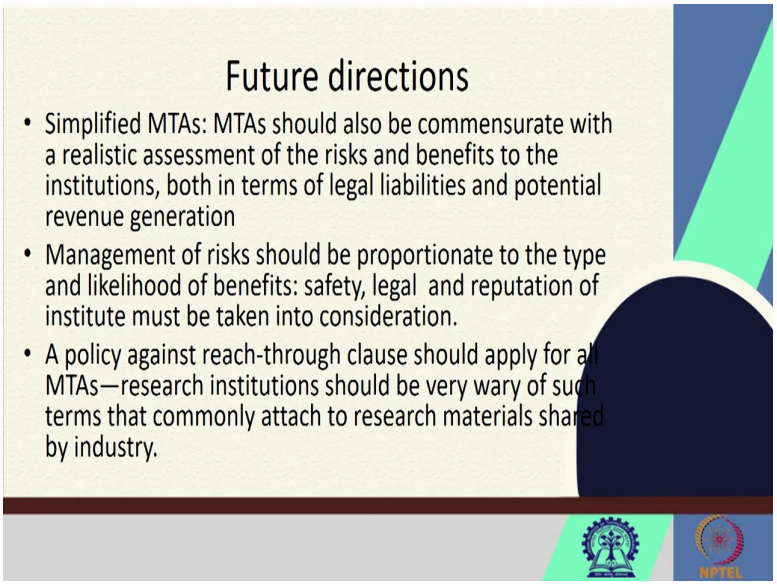
So now, some of the research organizations have started rethinking about the standard template and a new concept has been introduced. Like something called open MTA, which is again a kind of a template developed by the BioBricks Foundation and Open Plant Synthetic Biologic Research Center from like they started this initiative in 2005.

So, here what the aim is that, the blockage for redistribution or the difficulty in sharing the resources would be minimized with this open MTO. Means they access the attribution the reuse redistribution everything should be taken care of non-discrimination.

So, sometimes happens during the international transfers, someone may not be readily agreed to transfer into least developing countries or other countries. So, it may be only transferred between the developed nations, which generally has been the case.

So now, with this kind of the template they want to keep the MTA simple and open so that it basically fosters the biological research instead of restricting or instead of putting certain barriers to the core biological research.

(Refer Slide Time: 32:35)



So now, the goal1 which generally the MTA are being developed are that or the template in which somebody would think of or generating the MTA would also include the three points which I have mentioned here. Like the simplified MTAs. So, the MTA should be simple and it should be again commensurate with the realistic assessment of the risk and the benefit.

So, if it is simple research tool you should be realistic enough to foresee the benefit of those research tool, you cannot exaggerate or you cannot put certain clauses which may not be relevant in the current context. So, the assessment of the risk and benefits for the institution should be taken in a realistic way, and the legal liabilities and potential revenue generation should also be taken care of and accordingly the things would be drafted.

Then the management of the risk should be proportionate to the type and the likelihood of the benefits. You should be careful about the safety aspect, the legal aspect as well as the

reputation of the institute. Means how the product will be used, so the mishandling of the product or the misuse of the product should be prevented, and the reputation of the institute while carrying out the research or while sharing the thing would should also be taken into account.

And, then a policy against through clause should be applied to all MTAs the research institution should be vary of the terms and the conditions where which is generally attached to the material sharing by the industry. So, these are the few issues which should be taken care of and accordingly MTA should be drafted and that will benefit whole biotechnology research.

So, with this, was a brief snapshot about the material transfer agreement. In the next classes we will read more about the other licensing aspects of the biotechnological invention.

So, thank you.