

Nonprofit Plasmid Repository for the Research Community



Dr. Joanne Kamens, PhD
Executive Director

CEOCFO: Dr. Kamens, would you tell us the idea behind Addgene?

Dr. Kamens: Addgene has a unique nonprofit business model. The founder Melina Fan, while getting her PhD in a life science laboratory at Harvard, realized that she had many hurdles when trying to acquire materials that should be shared by other scientists once published. She found it difficult to get the material she needed from publications and it was not because authors did not want to share them necessarily but because the logistics were hard or they did not do a good job of banking them in the labs and could not retrieve the correct samples. She realized this was a lost opportunity. Scientists around the world had these materials in their freezers and were not sharing them. So Melina started the company with her husband, a software engineer, and her brother, who is in finance. They started small with just a few distributions at a time and now we have about forty thousand samples in the freezer. Currently we focus on distribution of a type of research material called a plasmid, which is a small circle of DNA used for all areas of life science research. We distribute about 110,000 plasmids a year to scientists around the world in 83 countries.

CEOCFO: Do the parties that should know about Addgene, know you exist?

Dr. Kamens: What is interesting about Addgene is that the quality of our service and the contributions of our depositors have helped us take our mission to a global stage. The deposits we solicit help drive robust distribution and it is free to deposit. So we are out there asking scientists to take advantage of a free service. There is a small fee to request and these reasonable fees along with our excellent customer and technical service have helped get the word out widely as well. Scientists in the United States are aware of us but we find we are still trying to spread the word in other countries. Every year we do a bit more. We are doing more website translation this year, have added more trips, have added a team based in Europe and are doing a trip to Australia for the first time this year. We cannot get everywhere but we use social media and other means to reach out everywhere there are researchers. We have active Facebook, Twitter and LinkedIn pages and we contact scientists by email and by Skype. We try to stay in-touch with our community. I think we do a good job but we are always spreading the word. We always find people that do not know about us when we go on our trips.

CEOCFO: Is there any reluctance to participate?

Dr. Kamens: At first there were skeptics but we are now widely accepted and encouraged. We are kind of in a “blue ocean”. There are other repositories that store plasmids, but we are unique in the level of customer support and technical service that we offer. Addgene has changed the way scientists do this process of materials sharing and even has an impact on how scientists do science. Now, the young scientists that are coming through the ranks are more likely to have requested something from the Addgene repository so are more likely to deposit their own materials. As time goes on, instead of soliciting the deposits, more scientists come to us and say, “ Hey I have something for you” without Addgene having to solicit. I think the culture is changing and the open science culture is driving that a bit. Governments pay grants for these generated materials and data so the public expects the materials that result to be used efficiently. The vast majority of laboratories are eager to share via Addgene once they understand what we do and how we do it. They like all the services we provide and that they still own their materials while we handle the distribution. It is very difficult to ship internationally and we take care of that. Many labs will call us to re-request their own samples back because they have misplaced them so just our function as an archive can be very important.

CEOCFO: What is involved in the storage?

Dr. Kamens: Plasmid are little circles of DNA. A chromosome is long and complicated and when a scientist wants to study one gene they literally take sort of an enzymatic scissors and cut the gene out of this big long chromosome and

insert it in a plasmid that is about three to four orders of magnitude smaller. These very small pieces of DNA are easier to manipulate and use for experiments to study all aspects of gene function in different types of cells. That is why scientists use them. They are stored, if you will, in bacteria because they have certain elements that allow the bacteria to make copies of them within the bacterial cell. We do not synthesize them; we have the bacteria synthesize them for us. It is a standard laboratory protocol to retrieve the plasmid from the bacterial cells. To make more of the plasmid we just make more of the specific bacterial strain. We store them in the freezer in frozen bacterial stocks, which come to life when you grow them on a media at room temperature. For each sample we receive, we create three bar-coded samples. One is offsite by way of a safety repository and there are two copies onsite. We have a strict quality control procedure before a plasmid is released to make sure that it is what it is supposed to be and that scientists are getting what they think they are getting. We have a lot of data storage in our database. The intake process is extensive but that makes the materials more useful when they go out the door.

CEOCFO: *There is no shelf life, is that correct?*

Dr. Kamens: We store them indefinitely.

CEOCFO: *You are sending primarily to nonprofit organizations strictly research?*

Dr. Kamens: Yes, that is right!

“Addgene has changed the way scientists do this process of materials sharing and even has an impact on how scientists do science.” - Dr. Joanne Kamens, PhD

CEOCFO: *Your website indicates limited availability to for-profit entities. How does that work? Should you offer services to everyone?*

Dr. Kamens: We wish we could. Our main function is to try and fill a gap for scientists that were sharing their modified materials inefficiently or not at all. We are driving basic research and do not see a role in driving commercial development so we have chosen to primarily serve the nonprofit community as best we can. We do not distribute anything that is commercially available. We only distribute plasmids that are modified materials that are no longer like a thing you can buy in a commercial catalogue. We do have a few deposits where the materials are designed to be open source; those materials are available to industrial scientists that request them. I am hoping that in the future, we can move the needle a little bit and make things more available and for a variety of reasons, I think that might be possible. Addgene employs a material transfer agreement system that is quite unique and ground breaking. We have even won awards for it. It is an electronic system that makes it quick and easy to complete MTA approval online. Every material exchange is accompanied by the completion of the MTA which we then store in our electronic systems. The technology transfer offices on both ends of the exchange are involved in that process and very much appreciate this service.

CEOCFO: *Are you able to see trends in research based on the orders?*

Dr. Kamens: Yes we are. We have a great deal of data now and it is really exciting. We are working on a collaborative paper actually with some researchers at MIT to try to understand that more. We can just watch what is being ordered and see patterns. Some plasmids have been ordered thousands of times because they are so popular. Certain fields will become hot and if the scientists in those fields deposit to us early, we will see that happening and see the requests happening as well. One good example is a new field called genome engineering that is moving very fast right now. The newest tools in this toolbox are called CRISPRs. It has not filtered completely to the mainstream yet for people to understand what a huge discovery this was but it has made the New York Times so the word is getting out. Scientists are excited about this and we have distributed something like 23,000 plasmids in about two years. We see exciting trends both from the depositing side and the requesting side.

CEOCFO: *How do you handle the financial aspect when you are dealing with international companies?*

Dr. Kamens: We have a few things that we do. We ship to eighty-three countries so we have all kinds of ways to help scientists and universities take care of payment. The first thing is you have to order from us online. We do not accept fax or any other type of order. You must go through the online system and that makes it much more difficult at first but once the universities figure it out it gets easier. You can pay by credit card or purchase order so that works for most people. We will do specific money transfers with some countries. We also have distributors in China, Japan and Korea. In some of those countries, payment could be an issue and the distributors help us do that. Occasionally people will use their own distributors and we can work with them as well. Russia is one place where sometimes the transfer is difficult but we manage. We are very tenacious...if scientists want plasmids; we want to get them to them any way we can.

CEOCFO: *Why is Addgene important to you?*

Dr. Kamens: This is like a dream job. I was in for-profit pharma and biotech science for a long time, where I learned a lot and very much enjoyed. I did a lot of nonprofit work in my private life. I have a personal dedication to increasing diversity in science, for women and other under-represented groups. I enjoy the nonprofit mindset and work ethic. When this job became available, it really was a fantastic match for my interests and my experience. I am a molecular biologist so I understand what we are doing and can speak coherently to all of our customers and employees who are scientists. I am excited about collaboration; it has been a cornerstone of my career to work on projects that are collaborative. I had a role in biotech where I was managing alliances and I like that interface between groups and organizations. Addgene's mission is to facilitate collaboration. We are trying to accelerate research and discovery by improving access to useful materials and information to help scientists collaborate. I am dedicated to the mission. The longer I am here, the more impact I see Addgene making. Scientists write us letters about how much they appreciate the service we are providing and how much it makes their science easier for them. With this new field of genome engineering, we are extremely proud of the way we have brought the technology out quickly into the community so that hundreds of papers have been written in just 2 years using materials they requested from Addgene. This is great for morale. The company has grown dramatically since I have been here so I have been at Addgene four years and we started out at about nineteen people and we are over fifty now. For a nonprofit that is a good clip of growth. Watching the company expand and still maintain its close dedication to the mission and to each other as a group is extremely rewarding. I love working here, my fellow Addgenies are special and fantastic colleagues and I love what we do.

CEOCFO: *What should people remember when they read about Addgene?*

Dr. Kamens: We are here for the scientists. We are here to help you and any way we can do that we will. We love to hear from our community and learn new ways that we can help them. We are looking to expand into new areas. We just moved into new space so people should watch out for what Addgene grows into next.

Interview conducted by: Lynn Fosse, Senior Editor, CEOCFO Magazine



Addgene

For more information visit:
www.addgene.org

Joanne Kamens
617-245-2577
joanne.kamens@addgene.org