Snippets from the 2015 Annual Postdoc Survey:

- 33% of postdocs are on their 2nd postdoc
- 62% of postdocs live in postdoc housing but 83% of these postdocs say that the 3-year housing limit is an issue
- 65% of postdocs met with their PI last year to discuss their future career plans
- 60% of postdocs attended more than one career development seminar last year but 25% of postdocs still use the web as their primary source for career development
- Over 50% of postdocs at Mount Sinai are female
Silicon particles for drug delivery
By Alaa Abdine

Developing effective treatments for cancer involves more than obtaining just “the right drug”. The distribution of the drug into non-tumor tissues and the activity of multi-drug resistance proteins lead to a very small fraction of the drug actually targeting the tumor. To overcome these obstacles, a team of investigators from Houston Methodist Research Institute have developed a mechanism by which an injectable carrier of nanoparticles can move through all these barriers. Once inside the cancer cells, this device releases the drug directly and effectively.

Led by Drs. Mauro Ferrari and Haifa Shen, the team utilized polymerized doxorubicin packaged within a silicon nanodevice (iNPG-pDOX) and tested their carrier in a mouse model of triple negative breast cancer that metastasizes to the lungs. In their trial, 50% of the treated mice survived 8 months and showed no sign of any lung metastasis after treatment. Dr. Shen explained that these iNPG-pDOX nanoparticles contain several components, each contributing to a step in the journey of this “Trojan horse” from the syringe to the nucleus of the cancer cell. Due to the vasculature of the tumor, the iNPG-pDOX particles are immediately cleared from the blood and distributed around the cancer cells. Unlike DOX alone, pDOX (the polymerized DOX version packaged inside the iNPG particles) was not present at a high concentration in the heart or kidney, thus avoiding two major problems of injecting DOX alone. Once in the tumor, the silicone carrier is degraded and the polymers harboring Dox form the nanoparticles. These nanoparticles protect the pDOX molecules and are internalized by endocytosis. They are then recognized as vesicles and transported to the perinuclear region where the change of pH leads to the cleavage of the tethered polymer. This leads to the release of a high concentration of Dox inside the nuclei of tumor cells.

Houston Methodist has developed suitable manufacturing practices for this drug vehicle and plans to accelerate this cutting edge research to obtain FDA approval and begin testing the efficacy on patients in 2017 through clinical trials. This will allow for the next generation of nanocarrier systems to be built on the existing technology to obtain just “the right drug”. The distribution of the drug inside the cancer cells, this device releases the drug directly and effectively.

When I look out the window of my apartment on the 4th floor of a pre-war walk-up on the hill of St. Nicholas Terrace, I can see the sky and horizon with the Freedom Tower standing tall and staring back at me from among the rooftops. Then I think to myself, what do I want my horizon to be? Where am I heading?

We all have a tendency to follow mass movement. Postdocs apply for grants and acquire numerous skills, just in case they come in handy in the future when they finally become independent investigators. We obsessively cling to this path, learning to deal with high stress and low reward, leaving out all the other options and adding to the global overload of postdocs in the employment market\(^1\). This self-imposed pressure is exhausting.

So what’s next for me? After reading about all the options and requirements, I felt really overwhelmed and conflicted….I like doing research, but if I become a PI, it is like having a research management position but with more responsibilities. It involves writing, which I love, so maybe I should look for a medical writer position. But I like working with people, so what about teaching? However, the salary can be quite low. Speaking about higher salary, should I try industry?

Needless to say, I needed to strategize. So I started my IDP – Individual Development Plan\(^2\). Science Magazine published an article that describes the importance of planning in career development\(^3\). It provides references to other studies showing that “people who develop and implement strategies to pursue career-specific goals achieve greater career success as measured by salary, promotions, and level of responsibility. They also report greater career satisfaction and rate themselves as more successful than their peers compared to those without career plans”.

Once you identify your goal of the career path that will make your life meaningful and enjoyable for you, make sure to dedicate a set amount of time every day for achievement of that goal. Review your IDP monthly and record progress or the lack of such. Remember to talk to your peers – tell people about your plan and seek contacts. As much as you want to find your place in the puzzle, there are many other puzzle pieces out there that are similar to you, and it always helps if someone can pick you out from the crowd.

References:
\(^2\)http://myidp.sciencecareers.org
\(^3\)http://www.sciencemag.org/careers/2012/09/you-need-game-plan

UPCOMING EVENTS

- POSTDOC TOWN HALL!!! FRIDAY, APRIL 15 from 5-6pm in the Hatch Auditorium (Guggenheim Pavilion).
  Social to follow!

- A discussion and question period for the new 5-year limit for postdocs at Mount Sinai will occur sometime in April with Dr. Charles Mobbs and Theresa Scarabino. Keep your eyes open for an email announcing the date!

Mount Sinai and the Friedman Brain Institute have organized the first ever edition of the Science Storytelling workshop in collaboration with The Story Collider (see http://www.storycollider.org), an amazing platform founded by two scientists (two physicists, in fact - Ben Lillie and Brian Wecht). This program includes live shows (including NYC) and weekly podcasts by a variety of scientists with the purpose of using the power of storytelling to talk about science to a general audience. While many may consider this approach silly, it is actually a very powerful tool.

Why is it worth taking this course or looking into The Story Collider?
Dr. Daniela Schiller (Associate Professor in the Departments of Psychiatry and Neuroscience at Mount Sinai) was one of the people who strongly supported this initiative and she tells us three important reasons why attending such a workshop could be worthwhile for scientists of any level or background:

1. “Storytelling is MAGICAL – unlike movies and shows filled with pyrotechnics, here you have nothing – a naked stage with a single mic. Still, in an evening of storytelling you can cross continents, travel back and forth in time, and undergo funny, sad, and moving experiences, solely from the words of the storytellers.

2. Storytelling is TRANSFORMATIVE – listening to a powerful story, and especially telling one, where you translate your memories and experiences into this form of art, changes you. It can turn something painful, sad, and even shameful into something beautiful.

3. Storytelling is USEFUL – once you become aware of the concept of storytelling and the power of narrative, you begin to see it everywhere – in your grant proposals, papers, talks, and even emails. Essentially, it becomes an effective way of communicating science and beyond.”

Here is my question for my fellow postdocs: how many times after you’ve told people “I am a scientist”, people reply to you “oh, that’s so cool”, and that is the end of the conversation? My original goal was to become better at telling my story and my science to people that are not scientists, who are perhaps not even interested in what I am doing, with the goal of making them interested and able to understand my language. Also, everybody has an opinion about a movie or a politician and shares it in social contexts so why don’t people talk as freely about science in front of a drink?

I approached the course with these thoughts in my mind but I got back a lot more than just the fulfillment of my original goal. From other people’s stories, I found that there is so much personal history for each of the scientists I met and work with every day, and the reasons why each of us were driven into science were ultimately not ambition or the simple pursuit of scientific knowledge (as I might have expected), but rather extremely personal reasons that can only be expressed during a course like this.

We listened to stories and commented on them, and I found myself in disagreement with some of the other participants more than once. This was not surprising but, different than other purely scientific contexts, this time I got the chance to listen to my classmates’ stories and not just walk away with my disagreement. After listening to their stories and explanations, even the person I disagreed with becomes different and I felt connected to him/her somehow. At some level, I found that there is a human being with some level of weakness and personal history beyond their seemingly cold, pretentious comment. In class or on the stage, we got the chance to be what we really are after all: HUMAN scientists.

For more information about the story collider, contact Liz Neeley at lizneeley@storycollider.org.