

Podcast Name: *ACM ByteCast*

Episode: Regina Barzilay- Episode 44

Welcome to the *ACM ByteCast* podcast, a series from the Association for Computing Machinery! This episode of *ACM Bytecast* is part of a special collaboration with AMIA's *For Your Informatics* podcast. In this series, we talk to women leaders, researchers, practitioners and innovators who are at the intersection of computing research and practice to apply AI to healthcare and life science. Today, host Dr. Sabrina Hsueh of ACM is joined by co-host Dr. Adela Grando of the American Medical Informatics Association. Their guest is Dr. Regina Barzilay, a Professor of Electrical Engineering and Computer Science at MIT. She is also recognized as a Distinguished Professor for the School of Engineering for AI and Health AI Faculty Lead.

To begin, Dr. Regina Barzilay shares her career and the points that have led to her success. She has an interdisciplinary career and worked as a faculty member out of her PHD. In 2014, she was diagnosed with breast cancer and truly encountered the healthcare system long term. It was very troublesome for her to see how little AI was used then in the healthcare system. She wanted to change something after going through her own treatment and realized they had to dramatically change care. The field of AI matured since then and made a big difference in patient care. She also understood the field better, knowing that not every tool can be applied to every patient because we all have unique needs. She applied for a grant for clinical AI and worked on molecular techniques that could change discovery. Next, she discusses how she keeps pressing towards her goal. Regina shares how she is excited, but at the same time frustrated with clinical AI. It is a very challenging field to get into. She has worked with colleagues to create an AI machine that will detect breast cancer in the present, but also can look at the image and fast forward 5 years to see if this woman will get breast cancer. This technique can catch and treat cancer in early stages and lead to a more likely successful treatment. It took two years to get there where she applied for funding, but wasn't approved. She had multiple organizations that supported them and they were able to continue their research. The process of implementation is hard and clinical systems today need to find a good way to use AI for patient health. The slow speed of adoption is very disappointing.

In addition, she addresses how to overcome challenges and interdisciplinary changes. She says the biggest challenge is a cultural one, where the clinical scientist field was built in the last 7-8 years. A lot of questions arose and fundings agencies specialize in traditional statistics, which were not available within the field at the time. The second challenge was publishing papers in journals because the structure was different, and she had to relearn how to write the paper. The third challenge was the need to push the paper through the review process, so it could be published through the scientific community. Her advice to someone in this field is to be patient—there will be a lot of failures. She also suggests learning how to communicate with medical

professionals that you want to use your technology and to find the right people to ask. Regina also discusses ChatGPT and how exciting it is to have these tools in our communities. Despite how amazing AI is, sometimes the information can be totally wrong. It needs to be utilized in healthcare in a way that's safe, secure and where humans have control over the outcomes. Untamed beast that needs a process and proper way to bring into healthcare. She would like to see AI models improved with quantifying the uncertainty. A human can decide if the information the machine gives is true or not true, but our knowledge is limited. We need to create machine learning tools that can control other machine learning tools. If the human has to check every single sentence, then the human might as well write it. We have other devices that come with safety buttons if something is off- we need to create a mechanism to tell us when something is uncertain or off in AI too.

Lastly, Dr. Regina Barzilay talks about inequity in healthcare, especially in women's health, where a lot of diseases that affect women have not been studied well. She talks about making changes in these areas and learning more about these diseases to help us learn more about women's health. She suggests connecting with people and finding groups that share your interests and passions. There are many more clinicians that want to collaborate. Her advice is to not to be afraid and to find people to work with. You also don't have to be a specialist to help in the field. You will have your own set of stories, but keep eyes on goal and have a good attitude and humor about it. Health inequity has been an issue for decades and so many models have been trained on patients, but have not been tested on all populations including race and gender. We need to ensure that all bodies are represented and that the FDA regulations are using them. We need to find a way to remove the human intuition and bias as the main way to decide outcomes in healthcare, and have strong, statistical data to make decisions. People can help by making sure clinical scientists are part of conversations at the very beginning in creating and utilizing technology. Regulatory science should also increase to regulate AI. In closing, Regina shares how she has facilitated health equity in her work by testing across multi race populations to further expand the reach of testing.

Key Takeaways:

0:27 - Introducing today's guest Dr. Regina Barzilay.

3:12 - Regina introduces herself and talks about her career journey.

8:05 - Regina shares how she stayed focused on her goal throughout her career.

12:55 - Steps to overcome interdisciplinary changes.

16:44 - Opinion on ChatGPT and AI in healthcare.

19:38 - New models for using AI.

25:33 - Career moves for female professionals.

28:42 - Her advice for others in the field.

33:14 - Issues in health equity.

37:10 - How to move forward in this field.

40:48 - What Regina has done in her career to facilitate health equity.

Links

Learn more about [Dr. Regina Barzilay](#).

Learn more about [AMIA](#).

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Tags

AI, interdisciplinary. collaboration, AI research, professor, healthcare, equity, Regina Barzilay, clinical scientist, ChatCPT, AI in healthcare, females in health, advice, career, machines, community