ELIC Pilot Project (Dr. Mulshine)

- An overview was provided of the presentation Mr. Avila is developing for the International Association for the Study of Lung Cancer (IASLC) meeting on September 22nd.
- A subset of the IASLC, the Early Lung Imaging Confederation (ELIC), has received a $3M funding gift from the PhRMA Foundation for a pilot project that supports an open source quantitative lung volume experiment project aimed at validating drug and tool evaluation in a non-competitive space.
  - A cloud-based, secure, and de-identified image archive is being developed to create a CT lung imaging computing environment that removes barriers to site participation with high quality data, while meeting the clinical data regulatory requirements for the European Union (EU).
  - This tool, comprised of hub-and-spoke architecture, would serve as a database for cancer imaging data:
    - Shared data would remain housed and analyzed locally
    - The cloud-based computing tool would provide the analysis
    - A copy of the anonymized publicly available data would be available in the cloud image archive
      - The Clinical Trials Processor (CTP) will be used to assure removal of PHI
      - Quality control steps will be built into the process
  - Sites would be pre-screened prior to obtaining access to this shared data
  - Leveraging the cloud will allow collaboration amongst institutions internationally, and will facilitate research opportunities without having to move any data
    - This can be accelerated further with the use of artificial intelligence (AI) and deep learning tools

ELIC Design Details

- The ELIC cloud-based tool is comprised of centralized analysis hub-and data-shared (multi-site) spoke architecture.
- There are 10 global spokes on the Amazon Cloud, each providing 100 de-identified CT lung images (total of 1,000).
- Two separate open source algorithms would be used to test the cloud-based tool for the following:
  - Lung volume
  - Nodule segmentation
- There will be a live demonstration at the 19th World Conference on Lung Cancer (WCLC) in Toronto on September 22nd of the running of computational experiments at 10 sites.
- This will demonstrate that prospective CT image quality can be monitored and optimized in the hub and spoke environment with the RSNA/QIBA Small Lung Nodule Profile.
- All code is being distributed as free and open source software and sites are welcome to contribute to software development.

Sharing the News

- Conversation between Dr. Fred Hirsch (IASLC) and RSNA/QIBA leadership has been requested to discuss ways to expand efforts and bring QIBA to a larger audience.
• A peer-reviewed article published with details of the pilot project and simple experiments demonstrating the utility of the tool would be very helpful to publicize the effort
  o Dr. Reeves mentioned that he has a tool that can assess quality of large-batch cases
  o The Dutch-Belgian Randomized Lung Cancer Screening Trial (Dutch acronym: NELSON study) and International Early Lung Cancer Action Program (I-ELCAP) were suggested as additional resources
• Discussions are taking place with the FNIH regarding a related biomarker
  o Reliability analysis is needed for qualification of a small lung nodule biomarker, which would be a logical evolution of Profile-writing efforts
  o A starter database comprised of data from I-ELCAP and the NELSON study was recommended
  o There are also several interested cohorts in Italy, Poland, China, and Japan that may be willing to contribute

**Next Steps**
• Dr. Mulshine to follow up with Mr. Avila to coordinate a live demonstration on the September 6th call of the cloud-based resource
• Dr. Armato to inform Dr. Maryellen Giger (U Chicago) of the pilot and concept

**Next call:** September 6th at 1 pm CT
- Calls will be scheduled bimonthly in the near future and will eventually be scheduled monthly