Background
A stationary digital breast tomosynthesis system (s-DBT) uses a linear CNT based x-ray source array. • Increased spatial resolution over continuous motion DBT systems (4.1 compared to 3.0 cycles/mm) • Faster acquisition times than other DBT systems

Goal
Analyze breast specimen images using an s-DBT system and a 2D mammography system • Evaluate the image quality of both systems with respect to malignancy • Compare the visualization accuracy of both systems with respect to lesion margins • The preliminary results are reported here

Methods
39 patients were recruited under a UNC-CH IRB approved protocol • Specimens were first imaged at the hospital using standard 2D mammography (1.8X magnification, 26 kVp, varied exposure) • Specimens were then imaged using s-DBT (15 projections, 28 degrees, 70 μm pixel size, 26 kVp, 100 mAs, 1.08X magnification)

All images were reviewed by a reader with experience of DBT and 2D mammography images • Images were given a malignancy score (1 benign, 3-50% chance of malignancy, 5 malignant) • Confidence in the s-DBT versus the 2D images were recorded (-3 - less confident in s-DBT, +3 - more confident in s-DBT) • Surgical margins were assessed

Results

Conclusions
• Preliminary results have been acquired, they show that s-DBT is capable of producing equivalent and in some cases superior image quality to 2D mammography when imaging excised breast specimens. • Further statistical information is needed to determine the conclusive results of the study.

Acknowledgements
The project is supported by the National Cancer Institute under grant number U54CA119343. We would like to thank Hologic for providing the Selenia Dimension Tomosynthesis System and for technical support. Thanks to Jaclyn Wu for support in organizing image retrieval. Thanks to Jabari Calliste, Christy Inscoe, Jing Shan, and Marci Potuzko for support in acquiring image datasets.

Reference