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# UCLA Breast Surgery Program Report 2020

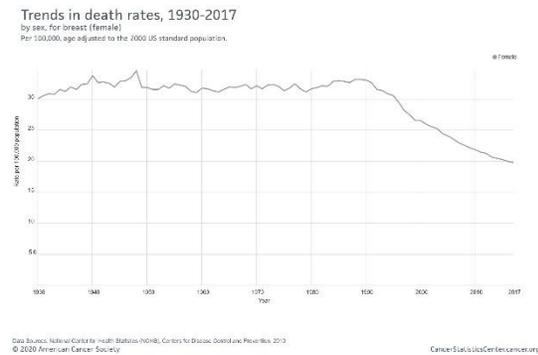


NOVEMBER 30

## Overview

Breast cancer is the most-commonly diagnosed cancer in the United States, with up to 280,000 cases anticipated in 2020. One woman in 8 will be diagnosed with breast cancer during her lifetime, and 30% of the cancers diagnosed in women will be of breast origin.

Although the incidence rate remains steady, the death rate fortunately continues to decline<sup>1</sup>. No doubt, the diagnosis and management of breast cancer will continue to be an ongoing charge and major health initiative for any competitive and successful health system.



<sup>1</sup><https://cancerstatisticscenter.cancer.org>

The Breast Program at UCLA, a destination center for patients with breast cancer, advances high quality patient-centered care, innovative research, and transformative medical education. Each patient is treated with the most up-to-date, comprehensive care by a multidisciplinary team of experts. UCLA offers both industry- and investigator-led clinical trials, and patients have ample access to ongoing clinical research. UCLA also trains breast fellows through our SSO-accredited program.

Over the past few years, the footprint of the UCLA Breast Program has expanded across several sites throughout Los Angeles and Orange Counties, with eleven surgeons providing breast care at 10 different clinical locations. In addition to Westwood and Santa Monica, our breast surgeons operate at the Surgery Center in Santa Clarita and will soon provide breast surgical services for patients at the South Bay ASC in Torrance.

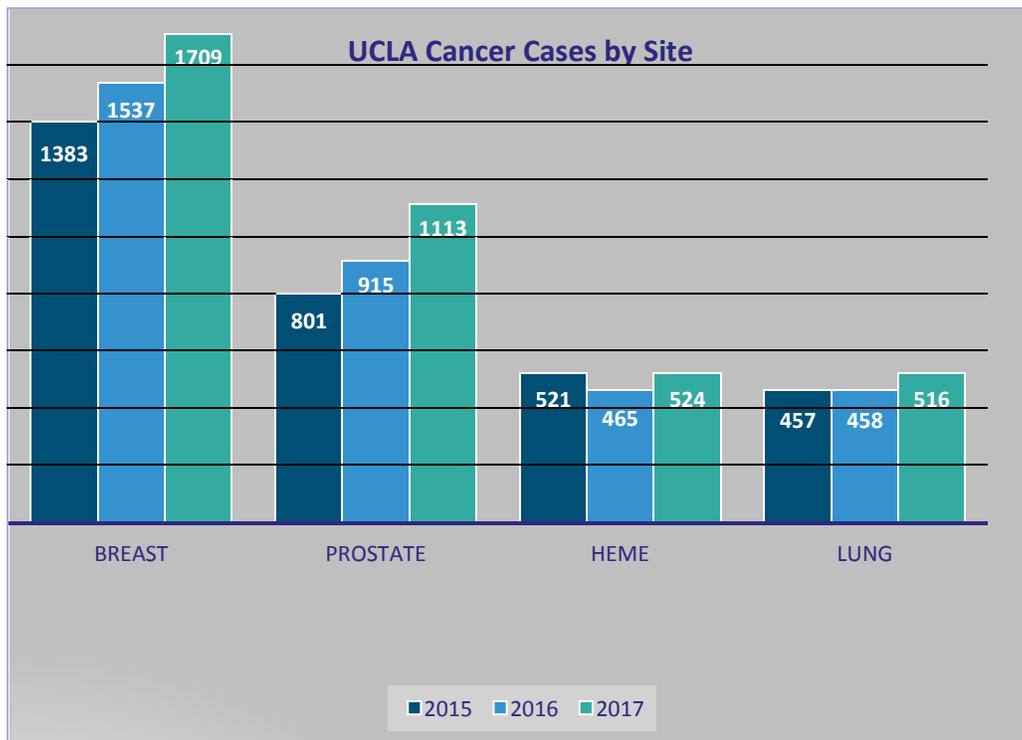
The information in this report reflects Cancer Registry data and data from the Breast Surgery section.

## Breast Cancer Incidence

Breast cancer continues to be the most-commonly diagnosed cancer in America, over prostate, lung and colorectal cancer. The American Cancer Society estimates that 30,650 women will be diagnosed with breast cancer in California alone in the year 2020<sup>1</sup>.

Breast cancer is also the most-commonly treated cancer at UCLA with over 1,700 patients treated throughout the system in 2017. Cancer of the breast accounts for over 19% of the cancers treated.

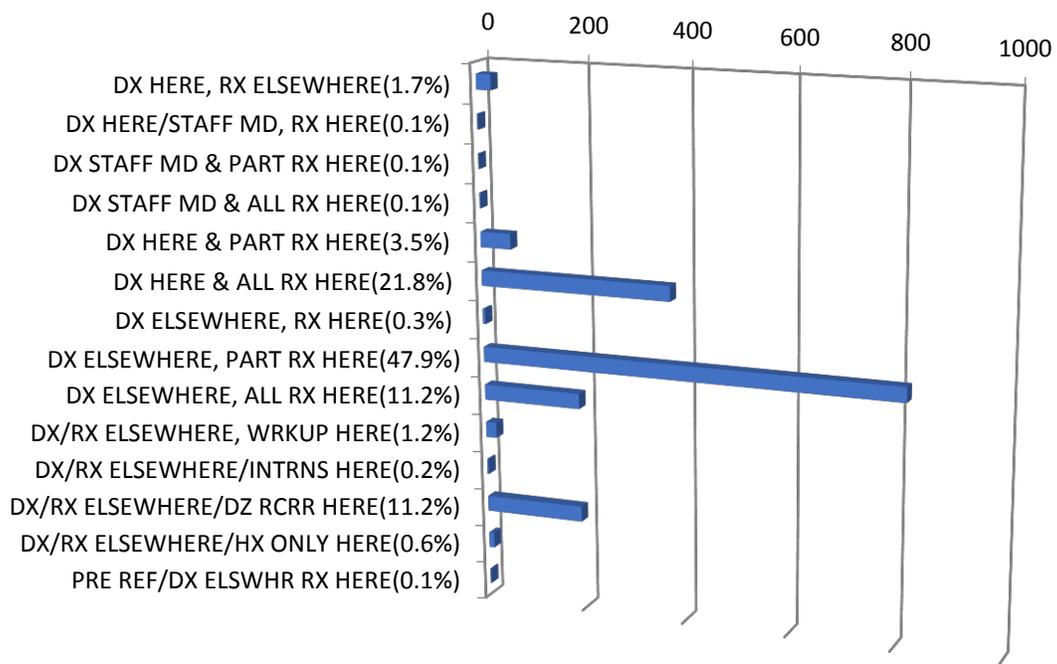
Since 2015, there has been a steady *11% annual increase* in the numbers of patients with breast cancer treated at UCLA.



<sup>1</sup><https://cancerstatisticscenter.cancer.org>

## Data on Analytic Cases

An “analytic” case is a case for which the cancer registry has information on the original diagnosis and/or the first course of treatment. At UCLA, over half (59.4%) of patients treated for breast cancer were diagnosed elsewhere and sought part or all their treatment at our center. Over 25% of patients who received their care at UCLA were diagnosed at UCLA. Of those diagnosed at our institution, 1.7% of patients received their care elsewhere.

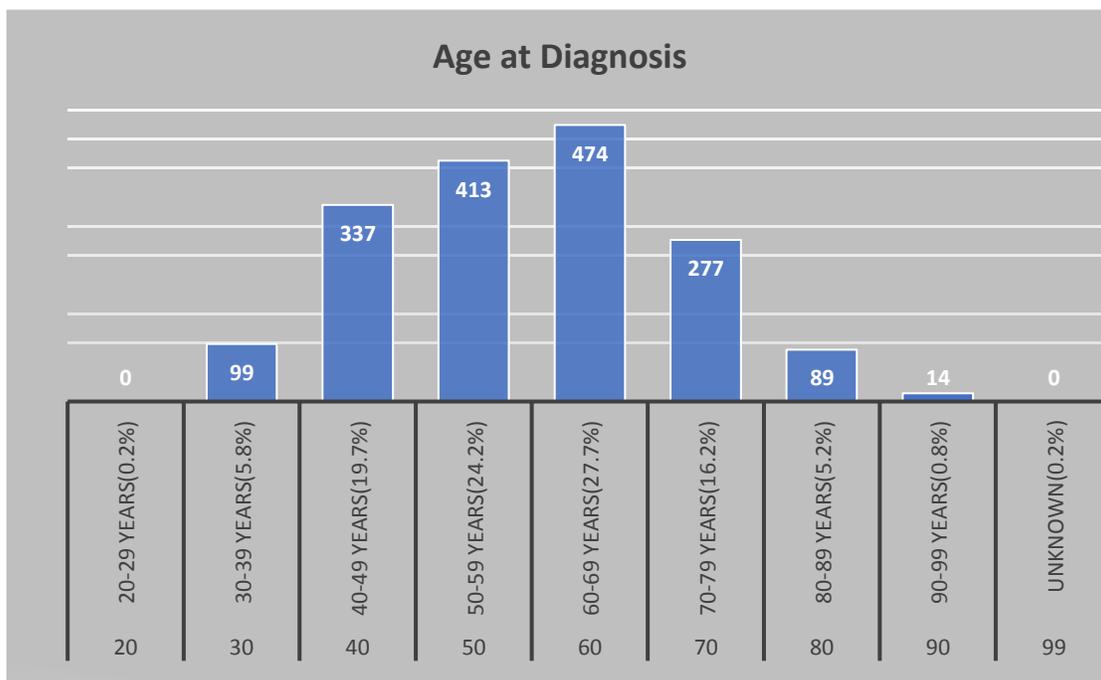


## Breast Cancer Risk Factors

The development of breast cancer is complex and likely attributable to a combination of factors, both modifiable and non-modifiable. In addition to gender and age, family history is a significant risk factor with two or more first-degree relatives with breast cancer conferring a 2-4-fold increase in risk. However, most women who are diagnosed with breast cancer do not have a strong family history, and only 5-10% will have a known pathogenic mutation (BRCA1, BRCA2, PALB2, P53).

Besides for being female, the greatest risk for breast cancer development is age. According to the SEER database, the median age of breast cancer diagnosis from 2012-2016 was 62, meaning that half of women diagnosed with breast cancer were younger than 62 years of age at the time of diagnosis<sup>2</sup>.

At UCLA, the median age was slightly younger at age 60. The largest group of women (27.7%) were diagnosed between the ages of 60-69. Still, over a quarter (25.7%) were diagnosed under the age of 50.



Stratifying a patient’s individual risk based on identifiable risk factors and charting out a personalized course for screening and risk-reduction is the goal of the UCLA High Risk Clinic. Staffed by medical oncologists, genetic counselors and nurse practitioners, the High-Risk Clinic at Parkside was developed in 2018 to offer patients a comprehensive risk assessment based on personal risk factors and family history.

<b>Modifiable risk factors</b>	<b>Non-modifiable risk factors</b>
Obesity/Weight gain	Age
Physical inactivity	Gender
Alcohol consumption	High risk breast lesions (ADH, LCIS/ALH)
Prolonged exposure to hormone replacement therapy	History of chest wall irradiation
<b>Reproductive risk factors</b>	Family history
Never having children	
Age at first childbirth > 30 years	
Early onset of menses	
Late onset of menopause	

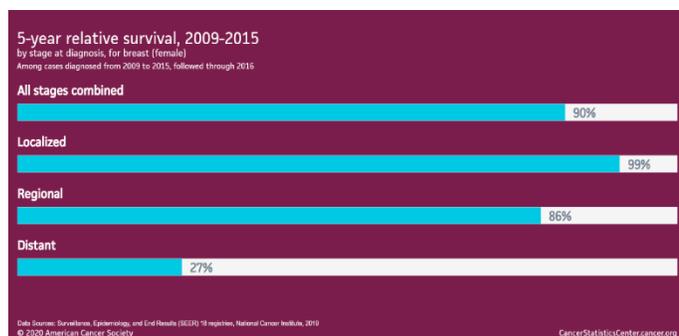
<sup>2</sup>Howlader N, Noone AM, Krapcho M, et al., eds. SEER Cancer Statistics Review, 1975-2016. Bethesda, MD: National Cancer Institute; 2019. Available from [seer.cancer.gov/csr/1975\\_2016/](http://seer.cancer.gov/csr/1975_2016/), based on November 2018 SEER data submission, posted to the SEER web site April 2019.

## Breast Cancer Stage

Breast cancer staging is classified according to the American Joint Commission on Cancer (AJCC). Breast cancer is no longer seen as one disease as several subtypes have been identified. The staging system was therefore updated in 2018 to incorporate tumor biology, in addition to size and lymph node status, to better reflect prognosis and outcome.

Stage 0 breast cancer includes breast cancer in its pre-invasive form. This is considered *in situ* disease, or a state in which breast cancer cells are present but are confined to the insides of the breast ducts. In this stage, cancer cells have not invaded through the duct walls and therefore do not have access to the lymphatic or circulatory systems so can not spread outside of the breast. This is a non-life-threatening stage of breast cancer.

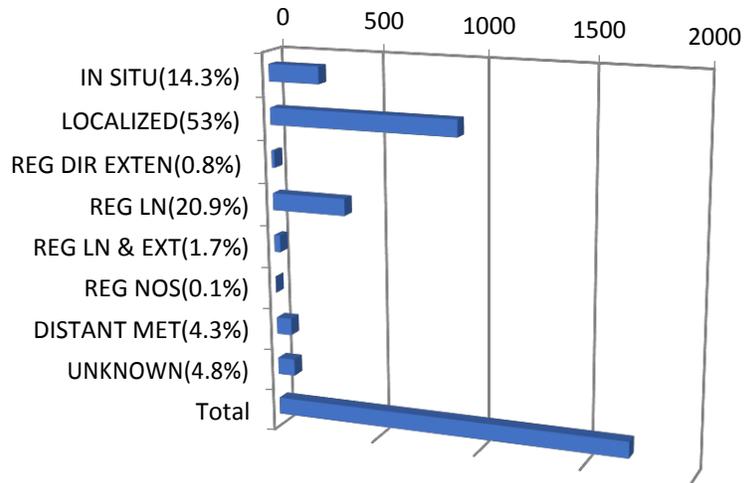
Invasive breast cancer means cancer cells which started in the ducts or the lobules of the breast have invaded through the walls of the ducts or lobules and are now in the surrounding breast tissue. Lymphatic channels and blood vessels are found in this surrounding tissue, which can potentially be portals for breast cancer spread. Invasive cancers therefore have the potential to spread to other organs in the body. Breast cancer which has not spread to lymph nodes is considered localized and has the best survival outcomes. Localized cancers can be Stage 0, I or II.



Cancers which have spread to the lymph nodes are either Stage II or Stage III. A high percentage of regionally metastatic breast cancers are still curable. Only patients who

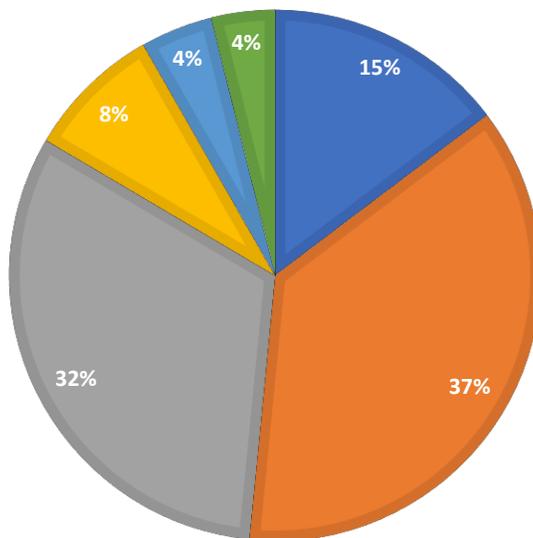
have evidence of distant metastases (breast cancer which has spread to the bones, lungs, liver, brain, or other sites) are currently not curable but still treatable.

Most patients treated at UCLA are diagnosed with localized disease (68.1%) with no evidence of spread to regional lymph nodes.



More than ¾ of patients (83.5%) were diagnosed with early stage disease (Stage 0, I, II) in 2017 with less than 5% presenting with distant metastases at the time of diagnosis.

■ Stage 0(14.7%) ■ Stage I(36.9%) ■ Stage II(31.9%)  
 ■ Stage III(8.3%) ■ Stage IV(4.4%) ■ Unknown(3.9%)



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## UCLA Breast Surgery Research

The Breast Surgery Section at UCLA has initiated two prospective surgical trials for patients with breast cancer, which led to changes in clinical practice and the adoption of new technology which has facilitated patient care.

### Wire-free localization technologies

For decades, patients at UCLA who required breast surgery for lesions that were detected only on mammogram underwent placement of a standard wire into the breast to direct the surgeon to the location of the lesion for removal in the operating room. This wire was placed on the morning of surgery at the Breast Imaging facility and then patients were transferred to the operating room with a wire projecting from the breast. This technique is standard across the country but results in logistical constraints: wire placement must occur on same day of surgery often delaying surgical start; wire could be dislodged during transport; patients are fasting for surgery and occasionally become vasovagal for same day localization procedure; at institutions where imaging center and surgical center are not co-localized, patients are transported outdoors with wire in breast.

UCLA was the first to evaluate radiofrequency technology (RFID) to address this problem. In a prospective pilot trial, we demonstrated that radiologists and surgeons could accurately localize and remove benign and malignant breast lesions utilizing this wire-free technology and that patient satisfaction was high with this approach<sup>3</sup>. This led to approval from UCLA to invest in wire-free technology, which has not only improved operating room efficiency but also patient experience by uncoupling the localization procedure from the surgery.

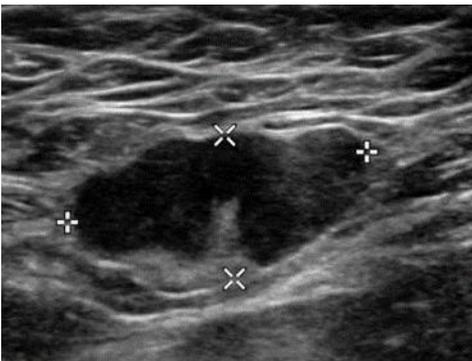
<sup>3</sup>DiNome ML, Kusske A, Attai D, Fischer CP, Hoyt AE. Microchipping the breast: an effective new technology for localizing non-palpable breast lesions for surgery. *Breast Cancer Research and Treatment* 2019 May;175(1):165-170. doi: 10.1007/s10549-019-05143-w. Epub 2019 Jan 28.

**LocNode Study** (ClinicalTrials.gov Identifier: NCT03411070)

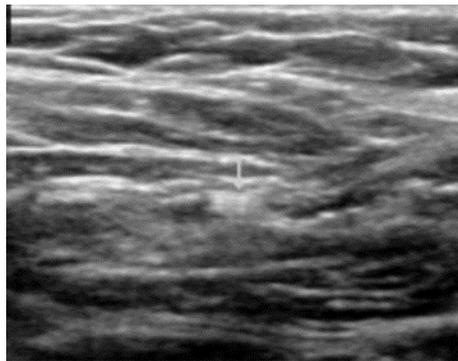
The UCLA Breast Surgery section also led a second, practice-changing clinical trial, the results of which will be presented at the Pacific Coast Surgical Association in February 2021.

As patients with positive lymph nodes are being successfully treated with chemotherapy, we are finding that over 40% no longer have positive lymph nodes after treatment. However, we are still surgically removing 10-20 lymph nodes to determine if cancer is still present in these patients. This procedure leads to lymphedema, a potentially disabling complication, in up to 25% of patients.

At UCLA, we addressed if we could identify and perform a targeted removal of the lymph node that had cancer in it to determine if cancer remained after chemotherapy rather than removing all of the lymph nodes, which is the current standard of care. However, this often poses a logistical problem in that the lymph node which had cancer in it prior to treatment often normalizes after treatment and is difficult to find.



Abnormal lymph node *before* chemotherapy



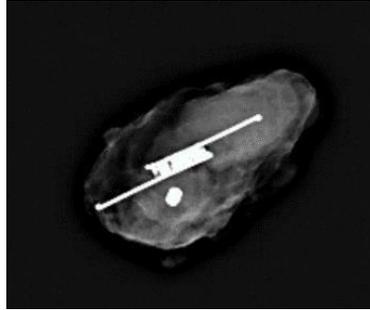
Same lymph node *after* chemotherapy

In our study, we repurposed the SAVI Scout localization system, which uses infrared technology and a device the size of a grain of rice to locate breast lesions during surgery, to help address this clinical problem.



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We prospectively placed the SAVI reflector under ultrasound guidance into the cancerous lymph node BEFORE chemotherapy when the lymph node was still easily visible. We then proceeded with removal of the sentinel nodes and the tagged node after chemotherapy. The SAVI was successfully retrieved in all cases, and 43.4% of patients in this proof of concept clinical trial were found to have no cancer left in their lymph nodes.



The success of this study will allow a more targeted evaluation of the lymph nodes for patients who have been treated with chemotherapy before surgery, and potentially spare many women the morbidity of a complete lymph node dissection.

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## Funding Support for Breast Surgery Section

Our surgical faculty have been successful in acquiring funding support of over \$2.1M for innovative breast cancer research at UCLA.

Lee, Minna (PI): UCLA SPORE in Prostate Cancer Developmental Research Program award, "Defining Similarities and Differences of Advanced, Highly Aggressive Prostate and Breast Cancer," **\$50,000** for 6/11/20 - 6/10/21.

Lee, Minna (PI): Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research Innovation Award, "Combined Study of Hormone-Negative Cancers of the Breast and Prostate to Reveal Shared Immunotherapeutics Targets," **\$50,000** for 7/1/20 - 6/30/21.

Lee, Minna (PI): Tate Fund, "Forward Transformation Assay of Human Mammary Epithelial Cells to Reveal Immunotherapeutics Targets for Triple-Negative Breast Cancer," **\$30,000** for 6/1/20 - 5/31/21.

Senofsky, Gregory (PI): Tate Fund, "Can Telomere Lengths in Benign Breast Biopsies Predict Future Development of Triple-Negative Breast Cancer?," **\$30,000**

DiNome, Maggie (PI): "Epigenetic mechanisms driving drug resistance and metastatic progression in triple-negative breast cancer," **\$1,396,970**.

DiNome, Maggie (PI): "Epigenetic classifiers to predict lymph node metastasis in early breast cancer," **\$306,061**.

DiNome, Maggie (PI): "Racial differences in epigenetic profiles of triple-negative breast cancer," **\$215,152**.

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## Publications from Breast Surgery Section

The surgical breast faculty have been prolific in 2020 with 19 publications so far this year:

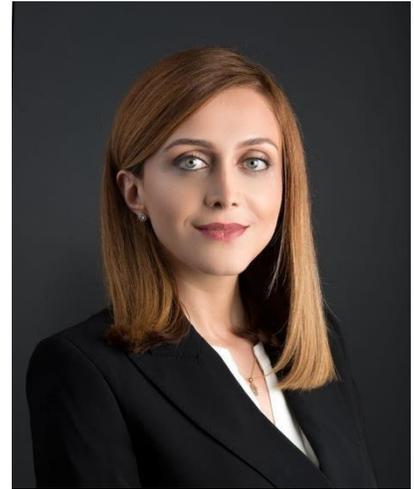
1. Jacobson JO, Berry LL, Spears PA, Steffensen KD, **Attai DJ**. Proposing a Bill of Rights for Patients With Cancer. *JCO Oncol Pract*. 2020 Mar;16(3):121-123. doi: 10.1200/JOP.19.00705. Epub 2020 Feb 10.
2. **Attai DJ**. Incorporating Clinical Evidence Into Clinical Practice: Management of Aromatase Inhibitor-Induced Musculoskeletal Symptoms. *JCO Oncol Pract*. 2020 Nov;16(11):740-741. doi: 10.1200/OP.20.00875.
3. Katz MS, Staley AC, **Attai DJ**. A History of #BCSM and Insights for Patient-Centered Online Interaction and Engagement. *J Patient Cent Res Rev*. 2020 Oct 23;7(4):304-312. doi: 10.17294/2330-0698.1753. eCollection 2020 Fall.
4. **Attai DJ**. Action Items for Breast Cancer Awareness Month. *J Patient Cent Res Rev*. 2020 Oct 23;7(4):291-294. doi: 10.17294/2330-0698.1801. eCollection 2020 Fall.
5. Keaver L, McGough AM, Du M, Chang W, Chomitz V, Allen JD, **Attai DJ**, Gualtieri L, Zhang FF. Self-Reported Changes and Perceived Barriers to Healthy Eating and Physical Activity among Global Breast Cancer Survivors: Results from an Exploratory Online Novel Survey. *J Acad Nutr Diet*. 2020 Oct 24:S2212-2672(20)31340-X. doi: 10.1016/j.jand.2020.09.031.
6. Berkowitz MJ, **Thompson CK**, Zibecchi LT, **Lee MK**, Streja E, Berkowitz JS, Wenziger CM, **Baker JL**, **DiNome ML**, **Attai DJ**. How patients experience endocrine therapy for breast cancer: an online survey of side effects, adherence, and medical team support. *J Cancer Surviv*. 2020 Aug 17:1-11. doi: 10.1007/s11764-020-00908-5. Online ahead of print.
7. **Lee MK**, Sanaiha Y, **Kusske AM**, **Thompson CK**, **Attai DJ**, **Baker JL**, Fischer CP, **DiNome ML**. A comparison of two non-radioactive alternatives to wire for the localization of non-palpable breast cancers. *Breast Cancer Res Treat*. 2020 Jul;182(2):299-303. doi: 10.1007/s10549-020-05707-1. Epub 2020 May 25. PMID: 32451679.
8. **Thompson CK**, **Lee MK**, **Baker JL**, **Attai DJ**, **DiNome ML**. Taking a Second Look at Neoadjuvant Endocrine Therapy for the Treatment of Early Stage Estrogen Receptor Positive Breast Cancer During the COVID-19 Outbreak. *Ann Surg*. 2020 Aug;272(2):e96-e97. doi: 10.1097/SLA.0000000000004027.
9. Mandelbaum AD, **Thompson CK**, **Attai DJ**, **Baker JL**, Slack G, **DiNome ML**, Benharash P, **Lee MK**. National Trends in Immediate Breast Reconstruction: An Analysis of Implant-Based Versus Autologous Reconstruction After Mastectomy. *Ann Surg Oncol*. 2020 Nov;27(12):4777-4785. doi: 10.1245/s10434-020-08903-x. Epub 2020 Jul 25.
10. Angarita S, Ye L, Runger D, Hadaya J, **Baker JL**, Dawson N, **Thompson CK**, **Lee MK**, **Attai DJ**, **DiNome ML**. Assessing the Burden of Nodal Disease for Breast Cancer Patients with Clinically Positive Nodes: Hope for More Limited Axillary Surgery. *Ann Surg Oncol*. 2020 Oct 21. doi:10.1245/s10434-020-09228-5. Online ahead of print.
11. **Baker JL**, Dizon DS, Streja E, Wenziger CM, **Thompson CK**, **Lee MK**, **DiNome ML**, **Attai DJ**. Going Flat After Mastectomy: Patient Reported Outcomes by Online Survey. *Ann Surg Oncol* 2020 (in press).

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12. **Baker JL**, Hegde J, **Thompson CK**, **Lee MK**, **DiNome ML**. Local therapy for inflammatory breast cancer. *Current Breast Cancer Reports* 2020, <https://doi.org/10.1007/s12609-020-00389-6>.
  13. **Bandera BC**, **Voci A**, **Nelson DW**, **Stern S**, **Barrak D**, **Fischer TD**, **DiNome ML**, **Goldfarb M**. Disparities in Risk Reduction Therapy Recommendations for Young Women With Lobular Carcinoma In-Situ. *Clin Breast Cancer*. 2020 Aug;20(4):e397-e402. doi: 10.1016/j.clbc.2020.01.006. Epub 2020 Jan 28.
  14. **Angarita S**, **DiNome M**. ASO Author Reflections: Moving the Ball Forward Toward De-Escalation of Axillary Surgery for Patients with Clinically Node-Positive Disease. *Ann Surg Oncol*. 2020 Oct 19. doi: 10.1245/s10434-020-09253-4. Online ahead of print.
  15. **Krishna V**, **Muetterties C**, **DiNome ML**, **Tseng CY**. Anaphylactic Reaction to Lymphazurin 1% during Breast Reconstruction Surgery: An Uncommon but Serious Complication. *Plast Reconstr Surg Glob Open*. 2020 Sep 17;8(9):e3075. doi: 10.1097/GOX.0000000000003075. eCollection 2020 Sep.
  16. **DiNome ML**. Repurposing the Mammographic Breast Density Category for Predicting Lymphedema Risk in Patients With Breast Cancer. *JAMA Netw Open*. 2020 Nov 2;3(11):e2024923. doi: 10.1001/jamanetworkopen.2020.24923.
  17. **Tuite CM**, **DiNome ML**, **Goldstein LJ**. Benefits of Digital Breast Tomosynthesis Beyond Baseline Screening. *JAMA Netw Open*. 2020 Jul 1;3(7):e2012361. doi: 10.1001/jamanetworkopen.2020.12361.
  18. **Graham D**, **DiNome ML**, **Ganz PA**. Breast Cancer Risk-Reducing Medications. *JAMA*. 2020 Jul 21;324(3):310. doi: 10.1001/jama.2020.11784.
  19. **Cook K** and **DiNome M**. Additional lumpectomy and irradiation for in breast recurrence of cancer – when less is more. *JAMA Oncol* 2020; 6(1):1-2.

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## SSO Surgical Breast Fellowship

In 2019, UCLA received national accreditation by the Society for Surgical Oncology to educate and train a breast fellow. In our first year, we successfully matched Dr. Farnaz Haji, who began her training in August 2020. Dr. Haji graduated *magna cum laude* from the University of Colorado with a degree in Biochemistry and *summa cum laude* from Colorado State University where she received a Masters degree in Biomedical Science. She has been an excellent addition to our breast surgery program.



We also welcome Dr. Julie Le, who completed her undergraduate training at UCLA, as our second breast fellow, who will begin her training in FY2022.

Thirteen faculty in the various disciplines have committed to the multidisciplinary training of our surgical breast fellow. We have added an annual breast didactic lecture series to the curriculum for residents and fellows in surgery, radiation oncology, breast imaging, pathology, and medical oncology, and a quarterly breast cancer journal club.

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## Fundraising

In October 2019, the UCLA Breast Program was the beneficiary of the Backyard Concert Series. This fundraising event was started over a decade ago to raise awareness and vital funding for the UCLA Health Autism Program and Teen Cancer America (TCA).

Last year, based on the participation of the grammy-award winning artist, P!nk, the UCLA Breast Program was gifted \$1M to support the breast fellowship and breast cancer research.



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## Concluding Remarks

The Breast Program at UCLA has seen tremendous growth over the preceding 4 years with the addition of 3 fellowship-trained breast surgeons, and 11 surgeons overall who provide dedicated breast care to patients throughout Los Angeles and Orange counties.

UCLA Health treats the largest numbers of patients with breast cancer in the region, and this number continues to grow annually.

The success of the Breast Program is due to the support of the Health System and the Department of Surgery, and the recognition that the breast cancer service line is an essential component of any successful healthcare delivery model.

Thank you for your support of our program,

Maggie DiNome, MD  
Chief, Breast Surgery Section  
Director, UCLA Breast Health