American Institute of Integrative Oncology
RESEARCH & EDUCATION

CASE STUDY SUBMISSION

Important: In observance of HIPAA and the sacred trust between care giver and patient, absolutely no patient names or identifying information is to be disclosed. Patient privacy is to be preserved. If you attach any medical records, pathology, surgical or laboratory reports, all names are to be removed.

Date	
Clinician Name & Credentials	
Email	

Describe Your Patient (Please SUMMARIZE and use economy of words. You will have 15 minutes to present)

Age, Gender & Ethnicity	
Body Type	
Values *What is most important to this patient? (Quality of Life, Decision Making, Side Effects?)*	
Stress Resilience	
Other	
Primary Diagnosis & Date *(ex. Breast Cancer L, T3 N1 M0, BRCA1 positive, grade 3, Ki67 > 45%)*	
Secondary Diagnosis *(ex. Diabetes Type 2, Obesity)*	

Patient Status

☐ New Diagnosis ☐ Recurrence ☐ In Treatment ☐ In Recovery ☐ In Remission ☐ At Risk

Concomitant and/or Complicating Factors *(ex: poorly controlled diabetes, insomnia, poor support system)*	
Adverse Effects of Cancer or Cancer Treatments *(ex. anxiety-depression, diarrhea, peripheral neuropathy)*	
Relevant Laboratory, Pathology & Medical Reports *(attach a PDF with patient identifying information removed or summarize)*	

Brief Summary of Recent History

Brief Summary of Additional Relevant Health, Medical, Psycho-Social and/or Family History

Other Relevant Information

Such as Chinese or Ayurvedic diagnosis, Naturopathic/Homeopathic Information, etc. *(ex. Liver Qi Stagnation, Dysbiosis)*

Brief Summary of Relevant Past Oncology or Medical Treatments

(ex. surgery, radiotherapy, chemotherapy, immunotherapy, hormone therapy, drug therapy)

Summary of Recent and Current Treatments

Medical Oncology Care *(surgery, radiotherapy, chemotherapy, immunotherapy, hormone therapy, drug therapy)*

Integrative Oncology Care *(nutraceutical, botanical, phytochemical, acupuncture, energy medicine, other)*

Your 2 Core Questions (stated clearly and succinctly)

1.

2.

Attached Medical Records for Reference (with patient identifying information removed)

Reviewed by Dr. Chilkov 04.15.2020
Case Study: 71 y/o F Breast cancer - Multi-foci invasive mucinous carcinoma
Submitted by: Judy Pruzinsky
Date Submitted: 03/10/2020

Dr. Chilkov Recommendation:

Overview:

Primary Diagnosis:

- **71 y/o F Breast cancer**
- 1/31/20 Excisional biopsy: Breast cancer, Multi-foci invasive mucinous carcinoma,
- 1.1 cm of larger, 0.6 cm smaller, grade II w MBR 6.
- DCIS extensive intraductal, at least 1.6 cm, cribriform and micropapillary
- Grade I, necrosis focal - less than 5mm from margin - more reason for radiation
- ER +, PgR+, HER2 -.

Secondary Diagnosis:

- Oncotype results: two tumors one with recurrence score of 2 other 5,
- Both with distant recurrence risk at 9 years 3%. CT benefit less than 1%,
- 11.0 ER +, 10.0 PR +, 8.3 HER2-
  Dr. NC Comment: Low oncotype scores. Little benefit from CT. Also consider her age.

Concomitant and/or Complicating Factors:

- Osteoporosis

Adverse Effects of Cancer or Cancer Treatments:

- After surgery: skin peel, bad yeast infection,
- Bladder leakage with tube withdrawal bronchospasm and asthma

Relevant Laboratory, Pathology & Medical Reports

- Low lymphocytes 23%
- High glucose 119 Not fasting

Current Treatment:

- ❖ Low lymphocytes 23% high glucose 119 Not fasting
- ❖ General nutraceutical and herbal support: VegeMeal, Probiophage,
  - ➢ Add Carnitine Tartrate to shake for muscle mass, mitochondrial function
- ❖ Hydrolyzyme/Digestzyme and HCl, Vit D, Ocuforce, Lycium Support, HSN, Immunitone or Ultimate Antiox off and on for GI upset: combos of GI Microb X, Olive

Leaf, Oregano, Allicillin

- Additional since dx: Twice Daily, Resveratrol, Melatonin, Curcumin, Immunoberry, CA Support, Omega Synergy changed to Ultra for dosing to 4 gr/day,
  - **I like DFH Resveratrol Supreme (Resveratrol +Quercetin) for ER+ BrCA. Consider this for your "resveratrol" supplement.**

Osteoben changed to Osteoforce and TRF due to Genistein and hormone positive - **I hear mixed views, what are your thoughts?**

- **(Osteoforce contains Copper. I prefer NO COPPER in supplements with cancer history. Genistein is also an aromatase inhibitor. It does not drive ER + cancers Preferentially binds to ER in bone and brain, not in breast)**

CORE QUESTION:

1. **Because of close margins (with good oncotype report) is it important to do the radiation in addition to the AI?**
   - **(She had more than one lesion, plus diffuse disease and close margins. Surgery cannot get it all RT is an extra insurance policy.)**
   - **The course of RT recommended is reasonable...not too aggressive or lengthy**
2. **What are the Side effects?**
   - **Fatigue, Radiation dermatitis, some scatter to lungs and heart depending on location of the field. Some tissue fibrosis. Most SE of RT are not experienced by patient until several weeks into course of treatment**
   - **A BENEFIT of RT: there is a systemic immune response to tumor cells that is durable. This is like a vaccine to her own tumor cells.**
3. **MD said no high dosing of vitamin A, C, E while on radiation - will make it less effective. Is that True? Anything else to not take?**
   - **Avoid nutraceutical oral antioxidants in high doses.**
   - **The amount in a multivitamin will not disrupt RT. The antioxidants in plants do not interfere with RT**
4. **Would it be a valid option to have another surgery done to make sure margins are cleaner instead of radiation? What's more injurious?**
   - **That would be the surgeon's call.**
   - **More surgery brings many more risks.**
   - **Surgeries are NOT being done now unless URGENT due to COVID 19**

Dr. Chilkov Recommendation:

- **Consider Six Gentlemen Formula/Xiang Sha Liu Jun Zi Tang or**
- **Ginseng and Astragaluls/ Bu Zhong Yi QI Tang?**
- **CUSTOM TONIC to Support Immunity, Tumor Control, Aromatase inhibition**

- I would like to see her take a formula like this two weeks on two weeks off for one year
  1 teaspoon twice daily
  30 Scutellaria Baicalensis Huang Qin
  30 Scutellaria barbata Ban Zhi Lian
  30 Astragalus Huang Qi
  30 Ganoderma Ling Zhi
  20 Oldenlandia diffusa Bai Hua She She Cao
  20 Curcuma longa (Yu Jin)
  20 Camelia chinensis (Green Tea)
  20 Uritca dioca Root (aromatase inhibitor)
  10 Taxus brevifolia tips
  10 Citrus Reticulata Chen Pi
  10 Zingiber off, dried Ginger Root Gan Jiang
  10 Glycyrrhiza Gan Cao

APMG
Associated Pathology Medical Group, Inc.

PATIENT INFORMATION	PHYSICIAN INFORMATION
[redacted]	William S. Berg, M.D. Palo Alto Medical Foundation - Radiology 2025 Soquel Ave. Santa Cruz, CA 95062
Patient ID: [redacted]	

SPECIMEN INFORMATION

Collected:	01/06/2020	
Received:	01/06/2020	1:50 pm
Reported:	01/08/2020	2:02 pm

Referring Physician: Berg, William

SURGICAL PATHOLOGY REPORT

CLINICAL INFORMATION

CLINICAL HISTORY:

CALCIFICATIONS

FINAL DIAGNOSIS

DIAGNOSIS:

RIGHT BREAST, 6:00, STEREOTACTIC CORE NEEDLE BIOPSIES:
A. FOCAL AREAS OF EXTRACELLULAR MUCIN CONTAINING ATYPICAL GLANDULAR EPITHELIUM, SUSPICIOUS FOR INVASIVE MUCINOUS OR COLLOID CARCINOMA. (SEE COMMENT.)
B. MODERATELY SIZED DILATED DUCTS CONTAINING ATYPICAL PAPILLARY EPITHELIAL PROLIFERATION MOST SUGGESTIVE OF INTRADUCTAL PAPILLOMA INVOLVED BY DCIS.
C. MICROCALCIFICATIONS ARE ASSOCIATED WITH THE ATYPICAL PAPILLARY EPITHELIAL PROLIFERATION BUT ARE NOT ASSOCIATED WITH COMEDO TYPE NECROSIS.
D. SMALL TO MODERATELY SIZED DUCTS LOCATED AWAY FROM INTRADUCTAL PAPILLARY NEOPLASM DEMONSTRATING ARCHITECTURAL AND CYTOLOGIC ATYPIA MOST CONSISTENT WITH LOW NUCLEAR GRADE DCIS OF PREDOMINANTLY CRIBRIFORM ARCHITECTURAL TYPE.

COMMENT: Slides A and C each demonstrate intraductal papillary epithelial proliferation that appears to be involved by low nuclear grade ductal carcinoma in situ of predominantly cribriform architectural type. Slide C also shows several detached fragments of papillary epithelial proliferation more consistent with intraductal papilloma. The ductal carcinoma in situ present on slide A shows focal central necrosis of neoplastic cells but does not demonstrate high nuclear grade or true comedo type necrosis. Slide B demonstrates two moderate sized ducts involved by fairly rigid low nuclear grade epithelial proliferation suggestive of low-grade DCIS.

In addition to the above described findings, slide A also demonstrates several small pools of mucin that contain small clusters of mildly atypical epithelial cells. These are quite suspicious for invasive mucinous or colloid carcinoma. The maximum dimension of any contiguous focus of possible invasive mucinous carcinoma appears to be slightly greater than 1 mm and is most likely not microinvasive in nature.

The histologic findings described above strongly warrant complete excision of the radiographic abnormality. Given the presence of at least 1 mm of probable invasive mucinous carcinoma, and perhaps a larger lesion, we do recommend sentinel lymph node sampling at the time of surgical treatment. We have performed estrogen and progesterone receptor staining on block A containing the probable invasive carcinoma, and will attempt to have NeoGenomics perform HER2 studies on this block if enough invasive carcinoma remains. Appropriate clinical correlation and followup are strongly recommended. Dr. Westphal has reviewed all three slides and concurs with the diagnosis.

Carlene A. Hawksley, M.D., Medical Director
M. Quinn Wickham, M.D.
Dominican Hospital, Associated Pathology Medical Group, Inc, 1555 Soquel Drive, Santa Cruz, CA 95065 (831)462-7625 FAX (831)462-7607
Frozen section slides processed at 1555 Soquel Dr. Santa Cruz, CA 95065, CLIA cert. #05D0606603.
Permanent slides processed at APMG, 105A Cooper Ct. Los Gatos, CA 95032 (408)399-5050, CLIA cert. #05D0712326

APMG
Associated Pathology Medical Group, Inc.

PATIENT INFORMATION	PHYSICIAN INFORMATION
[redacted]	Sutter Maternity and Surgery Center
Patient ID: [redacted]	Sutter Maternity & Surgery Center
	2900 Chanticleer Avenue
	Santa Cruz, CA 95065

SPECIMEN INFORMATION

Collected:	01/31/2020	
Received:	02/03/2020	10:24 am
Reported:	02/07/2020	3:20 pm

Referring Physician: DeSimone, Christopher
Copies sent to: Sutter Maternity and Surgery Center

SURGICAL PATHOLOGY REPORT

CLINICAL INFORMATION

CLINICAL HISTORY:

MALIGNANT NEOPLASM OF LOWER INNER QUADRANT OF RIGHT FEMALE BREAST

FINAL DIAGNOSIS

DIAGNOSIS:

1. **RIGHT AXILLARY SENTINEL LYMPH NODE, EXCISIONAL BIOPSY:**
   ONE LYMPH NODE NEGATIVE FOR MALIGNANCY ON MULTIPLE LEVEL SECTIONS EXAMINED.

   COMMENT: After the initial H&E stained section did not demonstrate evidence of metastatic tumor, we performed deeper levels x2 from the paraffin block. These confirm the absence of metastatic disease.

2. **RIGHT BREAST, WIRE LOCALIZATION EXCISIONAL BIOPSY:**
   A. PROMINENT REPARATIVE CHANGES PRESENT IN THE INFERIOR HALF OF THE SPECIMEN CONSISTENT WITH PREVIOUS CORE NEEDLE BIOPSY SITE.
   B. TWO APPARENTLY SEPARATE AND DISTINCT FOCI OF GRADE I INVASIVE DUCTAL CARCINOMA WITH EXTENSIVE EXTRACELLULAR MUCIN QUALIFYING AS MUCINOUS OR COLLOID CARCINOMAS. (SLIDE 2C IN SLICE 6 AND SLIDE 2J IN SLICE 9.)
   C. THE LARGER FOCUS OF INVASIVE DUCTAL CARCINOMA IS ADJACENT TO THE PREVIOUS BIOPSY SITE ON SLIDE 2J AND MEASURES 1.1 CM IN MAXIMUM DIMENSION.
   D. SMALLER FOCUS OF INVASIVE DUCTAL CARCINOMA IS PRESENT IN BREAST TISSUE AWAY FROM THE PREVIOUS BIOPSY SITE (SLIDE 2C) AND MEASURES 0.6 CM IN MAXIMUM DIMENSION.
   E. SURGICAL RESECTION MARGINS NEGATIVE FOR INVOLVEMENT BY INVASIVE DUCTAL CARCINOMA WITH THE CLOSEST APPROACH OF INVASIVE TUMOR IN SLICE 6 TO THE POSTERIOR MARGIN MEASURING 2 MM AND THE CLOSEST APPROACH OF THE INVASIVE TUMOR IN SLICE 9 MOST CLOSELY APPROACHING THE POSTERIOR MARGIN TO WITHIN 3 MM.
   F. EXTENSIVE DUCTAL CARCINOMA IN SITU OF LOW NUCLEAR GRADE AND PREDOMINANTLY CRIBRIFORM ARCHITECTURAL TYPE IS PRESENT IN CONSECUTIVE SLICES FROM SLICE 6 TO SLICE 11, MEASURING 1.6 CM IN MAXIMUM DIMENSION BY GLASS SLIDE MEASUREMENT.
   G. DUCTAL CARCINOMA IN SITU DEMONSTRATES FOCAL CENTRAL NECROSIS AND FOCALLY PROMINENT COARSE MICROCALCIFICATIONS.

Carlene A. Hawksley, M.D., Medical Director
M. Quinn Wickham, M.D.
Dominican Hospital, Associated Pathology Medical Group, Inc, 1555 Soquel Drive, Santa Cruz, CA 95065 (831)462-7625 FAX (831)462-7607
Frozen section slides processed at 1555 Soquel Dr. Santa Cruz, CA 95065, CLIA cert. #05D0606603.
Permanent slides processed at APMG, 105A Cooper Ct. Los Gatos, CA 95032 (408)399-5050, CLIA cert. #05D0712326

APMG
Associated Pathology Medical Group, Inc.

PATIENT INFORMATION	PHYSICIAN INFORMATION
	Sutter Maternity and Surgery Center Sutter Maternity & Surgery Center 2900 Chanticleer Avenue Santa Cruz, CA 95065

SPECIMEN INFORMATION

Collected:	01/31/2020	
Received:	02/03/2020	10:24 am
Reported:	02/07/2020	3:20 pm

Referring Physician: DeSimone, Christopher
Copies sent to: Sutter Maternity and Surgery Center

SURGICAL PATHOLOGY REPORT

H. DUCTAL CARCINOMA IN SITU VERY CLOSELY APPROACHES THE SUPERIOR MARGIN TO WITHIN LESS THAN 0.5 MM (SLIDE 2A) AND MOST CLOSELY APPROACHES THE POSTERIOR RESECTION MARGIN TO WITHIN 2 MM, WITH ALL OTHER MARGINS GREATER THAN 2 MM FOR DCIS.

I. NON-NEOPLASTIC BREAST PARENCHYMA DEMONSTRATES PROMINENT PROLIFERATIVE FIBROCYSTIC CHANGES INCLUDING ATYPICAL DUCTAL HYPERPLASIA, WITHOUT DEFINITE ATYPICAL INTRADUCTAL PAPILLARY PROLIFERATION IDENTIFIED. (SEE COMMENT.)

COMMENT: We have reviewed the patient's previous core needle biopsies of the right breast at 6:00 (P20-39.) Those biopsies showed a single focus of extracellular mucin containing atypical glandular epithelium that was highly suspicious for invasive mucinous or colloid carcinoma. That focus measured approximately 1 mm with associated extensive intraductal atypical proliferation most consistent with low nuclear grade ductal carcinoma in situ of predominantly cribriform architectural type. Some of the features in the prior core biopsies raised the possibility of an intraductal papillary neoplasm involved by low-grade ductal carcinoma in situ. Complete excision of the radiographic abnormality with consideration for sentinel lymph node sampling was recommended at that time.

In the current wire localization excisional biopsy, the biopsy site is identified within slices 8-11 (total of 13 slices.) The tissue adjacent to the previous biopsy site does demonstrate residual invasive mucinous carcinoma that does not involve surgical resection margins. There appears to be a second focus of invasive mucinous carcinoma at some distance from the prior biopsy site change, which also has negative surgical resection margins. The breast tissue, however, also demonstrates quite extensive ductal carcinoma in situ of low nuclear grade and predominantly cribriform architectural type. There is a spectrum of intraductal atypia ranging from atypical ductal hyperplasia in some of the biopsies away from the prior biopsy site to definite low nuclear grade DCIS. Microcalcifications are associated with some of the foci of DCIS despite the lack of comedo type necrosis. There is focal central necrosis of the DCIS present as well. Unfortunately, the ductal carcinoma in situ is present on slide 2A representing slice 1 containing the superior margin sectioned perpendicular to the inked margin. This focus of DCIS closely approaches the blue inked margin to within less than 0.5 mm. Appropriate clinical correlation and followup are recommended.

Dr. Westphal has reviewed slides 2A, 2C, 2J, 2L, and 2M and concurs with the diagnosis.

COMMENT: SYNOPTIC REPORT: BREAST

AJCC pTNM Staging (8th Edition).

PROCEDURE: Excision with wire localization.
SPECIMEN LATERALITY: Right.

TUMOR SITE: 6:00.
TUMOR SIZE: 1.1 cm.

APMG
Associated Pathology Medical Group, Inc.

PATIENT INFORMATION	PHYSICIAN INFORMATION
	Sutter Maternity and Surgery Center Sutter Maternity & Surgery Center 2900 Chanticleer Avenue Santa Cruz, CA 95065

SPECIMEN INFORMATION

Collected:	01/31/2020	
Received:	02/03/2020	10:24 am
Reported:	02/07/2020	3:20 pm

Referring Physician: DeSimone, Christopher
Copies sent to: Sutter Maternity and Surgery Center

SURGICAL PATHOLOGY REPORT

HISTOLOGIC TYPE OF INVASIVE CARCINOMA: Invasive mucinous carcinoma.

HISTOLOGIC GRADE: Grade II with a total MBR score of 6 (tubules 3, nuclei 2, mitoses 1).

TUMOR FOCALITY: Multiple foci of invasive carcinoma as described above with the larger measuring 1.1 cm and the smaller measuring 0.6 cm.

DUCTAL CARCINOMA IN SITU: DCIS is present and positive for extensive intraductal component.
SIZE (EXTENT) OF DCIS: At least 1.6 cm by glass slide measurement.
ARCHITECTURAL PATTERNS: Cribriform and micropapillary.
NUCLEAR GRADE: Grade I or low.
NECROSIS: Present, focal.
LOBULAR CARCINOMA IN SITU: No LCIS is present.

MARGINS:
INVASIVE CARCINOMA: Uninvolved by invasive carcinoma with the closest approach to the posterior resection margin for both foci of invasive mucinous carcinoma measuring greater than 2 mm.
DCIS: Not definitively involved by DCIS, but the closest approach of DCIS to the superior margin measures less than 0.5 mm and the closest approach of DCIS to the posterior resection margin measures 2 mm.

REGIONAL LYMPH NODES:
UNINVOLVED BY TUMOR CELLS
NUMBER OF LYMPH NODES EXAMINED: 1.
NUMBER OF SENTINEL LYMPH NODES EXAMINED: 1.

TREATMENT EFFECT: No known presurgical therapy.

LYMPH-VASCULAR INVASION: Not identified.

PATHOLOGIC STAGING:
PRIMARY TUMOR: mpT1c.
REGIONAL LYMPH NODES: pN0(sn).

ADDITIONAL PATHOLOGIC FINDINGS: Extensive proliferative fibrocystic changes with atypical ductal hyperplasia.

APMG
Associated Pathology Medical Group, Inc.

PATIENT INFORMATION	PHYSICIAN INFORMATION
	Sutter Maternity and Surgery Center Sutter Maternity & Surgery Center 2900 Chanticleer Avenue Santa Cruz, CA 95065

SPECIMEN INFORMATION

Collected:	01/31/2020	
Received:	02/03/2020	10:24 am
Reported:	02/07/2020	3:20 pm

Referring Physician: DeSimone, Christopher
Copies sent to: Sutter Maternity and Surgery Center

SURGICAL PATHOLOGY REPORT

ANCILLARY STUDIES (PERFORMED ON PRIOR CORE BIOPSY P20-39):

BREAST BIOMARKER RESULTS:
ESTROGEN RECEPTOR (ER): Positive.
PERCENTAGE OF TUMOR NUCLEI STAINING: 100%.
AVERAGE INTENSITY OF STAINING: Strong.
INTERNAL CONTROLS PRESENT AND STAINING APPROPRIATELY: Yes.
COMMENT: The ductal carcinoma in situ present on this slide also shows strong nuclear staining of 100% of the neoplastic cells.
PROGESTERONE RECEPTOR (PgR): Positive.
PERCENTAGE OF TUMOR NUCLEI STAINING: 100%.
AVERAGE INTENSITY OF STAINING: Strong.
INTERNAL CONTROLS PRESENT AND STAINING APPROPRIATELY: Yes.
COMMENT: The ductal carcinoma in situ present on this slide demonstrates strong nuclear staining of 100% of the neoplastic cells.

HER2 (BY IMMUNOHISTOCHEMISTRY): Negative at 0.

HER2 (BY IN SITU HYBRIDIZATION): Negative.

USING DUAL PROBE ASSAY
AVERAGE NUMBER OF HER2 COPY SIGNALS PER NUCLEUS: 2.3.
AVERAGE NUMBER OF CEN17 COPY SIGNALS PER NUCLEUS: 2.2.
HER2/CEN17 RATIO: 1.0.

INVASIVE TUMOR NUCLEI SCORED: 50.

COLD ISCHEMIA AND FIXATION TIMES MEET THE REQUIREMENTS SPECIFIED IN THE LATEST VERSION OF THE ASCO/CAP GUIDELINES (Cold ischemia time < 1 hour: fixation time 6-72 hours): Yes.
Fixation time: 8-10 hrs

METHODS

FIXATIVE: Formalin.

ESTROGEN RECEPTOR:
FOOD AND DRUG ADMINISTRATION (FDA) CLEARED (SPECIFY TEST/VENDOR): Dako.

APMG
Associated Pathology Medical Group, Inc.

PATIENT INFORMATION	PHYSICIAN INFORMATION
[redacted]	Sutter Maternity and Surgery Center Sutter Maternity & Surgery Center 2900 Chanticleer Avenue Santa Cruz, CA 95065

SPECIMEN INFORMATION

Collected:	01/31/2020	
Received:	02/03/2020	10:24 am
Reported:	02/07/2020	3:20 pm

Referring Physician: DeSimone, Christopher
Copies sent to: Sutter Maternity and Surgery Center

SURGICAL PATHOLOGY REPORT

PRIMARY ANTIBODY: EP1

PROGESTERONE RECEPTOR:
FDA CLEARED TEST/VENDOR: Dako
PRIMARY ANTIBODY: PgR 636

These tests were performed on formalin fixed paraffin embedded tissue using IHC. The performance characteristics of the above tests have been determined by APMG. While some antibodies have not been approved by the FDA, clearance/approval is not mandated. These antibodies are well documented and clinically accepted prognostic indicators. These tests should not be regarded as part of research investigations. Known positive and negative control tissues show appropriate staining. Visualization for ER and PR is EnVision Flex+, High-pH (Link); and for HercepTest is dextran polymer conjugated HP and affinity isolated goat anti-rabbit IG, followed by DAB chromogen. These results should be used in the context of clinical/pathologic findings.

COMMENT:
The HER2 studies by IHC and FISH were performed by NeoGenomics reference laboratory. Please see their report (accession #2511012) for additional information regarding methodology.

COMMENT: The invasive mucinous carcinoma present in this case is essentially identical to the small focus of invasive mucinous carcinoma seen in the prior biopsies on which the above studies were performed. The estrogen and progesterone receptor staining was quite intense and diffuse and it does not appear to be necessary to repeat those stains on the current material. Nevertheless, given the small focus of invasive carcinoma present in the prior biopsy for HER2 testing, we will repeat HER2 studies performed by NeoGenomics reference laboratory on paraffin block 2C.

I have reviewed the quality of any H&E staining on this case and it is acceptable.
CAH/km

PATHOLOGIST: Carlene A. Hawksley, M.D.

SPECIMEN DATA

SPECIMEN TYPE/LOCATION:

1. Lymph node, right axillary sentinel
2. Breast, right

APMG
Associated Pathology Medical Group, Inc.

PATIENT INFORMATION	PHYSICIAN INFORMATION
	Sutter Maternity and Surgery Center Sutter Maternity & Surgery Center 2900 Chanticleer Avenue Santa Cruz, CA 95065

SPECIMEN INFORMATION

Collected:	01/31/2020	
Received:	02/03/2020	10:24 am
Reported:	02/07/2020	3:20 pm

Referring Physician: DeSimone, Christopher
Copies sent to: Sutter Maternity and Surgery Center

SURGICAL PATHOLOGY REPORT

GROSS DESCRIPTION:

1. Received are two containers labeled with the patient's name 'Winthers, Laurie'.
The first specimen is received in a single formalin-filled container additionally labeled 'right axillary sentinel lymph node' and consists of a 1.2 x 0.9 x 0.9 cm tan-yellow lymph node candidate that is serially sectioned and submitted entirely in one cassette.

2. The second specimen is received in a single formalin-filled container additionally labeled 'right breast mastectomy short stitch superior, long lateral, double deep' and consists of an oriented 46.6 gram lumpectomy specimen that measures 6.6 cm superior to inferior, 6.1 cm medial to lateral, 3.1 cm from superficial to deep (short suture superior, long suture lateral, double suture deep). A needle localization wire extends from the superficial aspect of the specimen. The specimen is inked as follows: superior - blue, inferior - green, lateral - yellow, medial - violet, superficial - orange and deep - black. The specimen is serially sectioned from superior to inferior into 13 slices (slice 1 - superior margin, slice 13 - inferior margin) to show a 1.7 x 1.6 x 1.2 cm ill-defined yellow chalky indurated lesion within slices 8-11, 0.1 cm from deep, 0.8 cm from superficial, 1.8 cm from inferior, 1.9 cm from lateral and greater than 2.0 cm from superior. No biopsy clip is identified (the history says the patient declined her clip). The remaining parenchyma is greater than 95% yellow lobulated adipose tissue and less than 5% dense white fibrous tissue. No additional mass lesions are identified. Representative sections are submitted (the lesion is submitted entirely) as follows: 2A - superior margin perpendicularly sectioned, 2B-D - slice 6 trisected, 2E - representative slice 7 adjacent to lesion, 2F&G - representative slice 8 lesion, 2H-K - slice 9 entirely composite with lesion, 2L&M - representative slice 10 lesion, 2N - representative slice 11 lesion, 2O -representative slice 12 adjacent to lesion, 2P - inferior margin perpendicularly sectioned.
NL:km

Genomic Health®

oncotype DX®
Breast Recurrence Score

Oncotype DX Breast Recurrence Score® Report

Node Negative

[redacted]

Report Number: [redacted] Report Date: 18-Mar-2020

Specimen Source/ID: **Breast/U20-528-2J**

Ordering Physician: **Dr. Glenn Donald Wong**

Recurrence Score® (RS) Result

5

Decision on individual treatment especially around the RS 25 cutoff may consider other clinical factors.

Distant Recurrence Risk at 9 Years

With AI or TAM Alone

3%

95% CI (2%, 4%)

TAILORx

AI = Aromatase Inhibitor / TAM = Tamoxifen
CI = Confidence Intervals

Group Average Absolute Chemotherapy (CT) Benefit*

RS 0-10 All Ages

<1%

95% CI (-6%, 3%)

NSABP B-20

*For estimated CT benefit for individual RS results, see page 2.

Exploratory Subgroup Analysis for TAILORx and NSABP B-20:
Absolute CT Benefit for Distant Recurrence by Age and RS Result

Age	RS 0-10	RS 11-15	RS 16-20	RS 21-25	RS 26-100
>50 years	No CT Benefit (<1%)				>15% CT Benefit
≤50 years	No CT Benefit (<1%)		~1.6% CT Benefit	~6.5% CT Benefit	>15% CT Benefit

Quantitative Single-Gene Scores

10.5 ER Positive

<3.7 6.5 ≥12.5

9.7 PR Positive

<3.2 5.5 ≥10.0

8.5 HER2 Negative

<7.6 10.7 11.5 ≥13.0

Laboratory Director(s): William P. Joseph, M.D.
Genomic Health, Inc., 301 Penobscot Drive, Redwood City, CA 94063, USA - CLIA Number 05D1018272

Genomic Health®

oncotype DX®
Breast Recurrence Score

Oncotype DX Breast Recurrence Score® Report

Node Negative

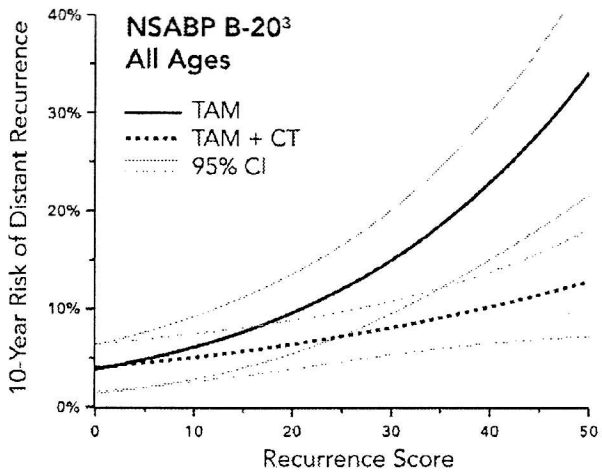
[redacted]

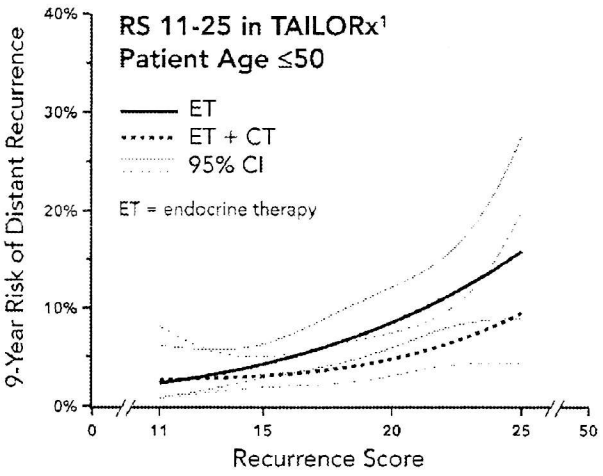
Report Number: [redacted] Report Date: 18-Mar-2020

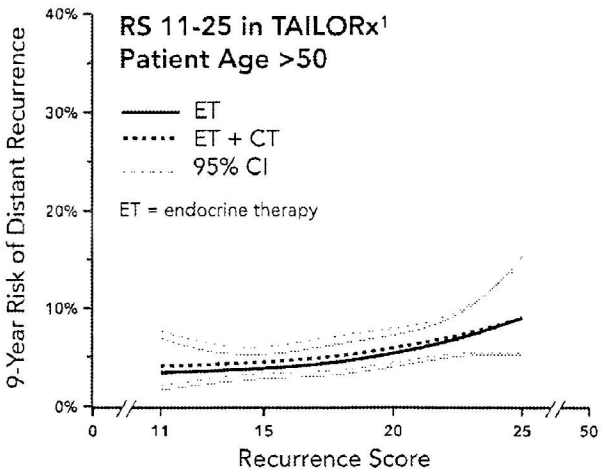
Specimen Source/ID: **Breast/U20-528-2J**

Ordering Physician: **Dr. Glenn Donald Wong**

Estimated Chemotherapy Benefit for Individual Recurrence Score Results







Recurrence Score ranges shown above reflect randomized patients in NSABP B-20 and TAILORx.

Genomic Health®

oncotype DX®
Breast Recurrence Score

Oncotype DX Breast Recurrence Score® Report

Node Negative

[redacted]

Report Number: [redacted] Report Date: **18-Mar-2020**

Specimen Source/ID: **Breast/U20-528-2J**

Ordering Physician: **Dr. Glenn Donald Wong**

Medical Record/Patient #:

Date of Collection: **31-Jan-2020**

Specimen Received: **17-Feb-2020**

The Oncotype DX Breast Recurrence Score test uses RT-PCR to determine the expression of a panel of 21 genes (16 cancer-related, 5 reference) in tumor tissue.

The Oncotype DX Breast Recurrence Score test uses RT-PCR to provide prognostic and predictive information to guide the systemic treatment decisions with hormonal therapy and/or chemotherapy for patients diagnosed with ER+, HER2- invasive breast cancer. Decisions on treatment should also be based on independent medical judgment of the treating physician taking into consideration all available information concerning the patient's medical condition, including other pathological tests, in accordance with your communities' standard of care.

The **Recurrence Score (RS) Result**, which ranges from 0-100, is calculated from the quantitative RT-PCR analysis of the 21 genes.

The **Distant Recurrence Risk** at 9 Years (Prognosis), in patients with N–, ER+ breast cancer treated with endocrine therapy alone, is provided by the TAILORx[1] trial for RS 0-25 and by the NSABP B-14[2] trial for RS 26-100. Risk is for individual RS results. The 95% confidence intervals for distant recurrence at 9 years are ±2% or less for RS 0-22, and range from ±3% to ±11% as RS increases from 23-50. The TAILORx trial enrolled 10,273 patients and 5,018 patients with RS 0-25 were treated with endocrine therapy (tamoxifen or an aromatase inhibitor) alone. The NSABP B-14 trial enrolled 668 patients who were treated with tamoxifen alone.

The **Absolute Benefit of Chemotherapy** for all ages is provided by the TAILORx trial for RS 11-25 and by the NSABP B-20[3] trial for RS 0-10 and RS 26-100. Results for the reduction in distant recurrence at 9 years are for the TAILORx-defined RS groups 0-10, 11-25, and 26-100. TAILORx trial enrolled 10,273 patients and 6,711 were randomized to endocrine therapy (tamoxifen or an aromatase inhibitor) alone or endocrine therapy plus chemotherapy (including anthracyclines and/or taxanes). The NSABP B-20 clinical trial enrolled 651 patients who were randomized to treatment with tamoxifen alone or tamoxifen plus CMF/MF chemotherapy. The magnitude of the absolute benefit of chemotherapy was ~6% at RS 26, and increased as the RS results increased from 26-100, with an average absolute benefit of ~24% and a conservative group estimate of >15% based on the width of the confidence intervals.

Exploratory Subgroup Analysis for TAILORx and NSABP B-20 indicate that RS and age are the strongest predictors of chemotherapy benefit. The absolute reduction of distant recurrence from chemotherapy for patients >50 years and ≤50 years is shown here for RS groups: 11-15, 16-20, and 21-25 from TAILORx, and 0-10 and 26-100 from NSABP B-20.

Quantitative Single-Gene Scores for quality control. The Oncotype DX test uses quantitative RT-PCR to determine the RNA expression of ER, PR, and HER2, using the published validated cut-offs[4]. The standard deviations of single-gene results are less than 0.5 units. The RT-PCR single-gene results may differ from ER, PR, or HER2 results reported using other methods or reported by other laboratories.

References:

1. Sparano et al. *N Engl J Med.* 2018.; ECOG and Genomic Health (data on file). 2. Paik et al. *N Engl J Med.* 2004. 3. Paik et al. *J Clin Oncol.* 2006.; Sparano and Paik *J Clin Oncol.* 2008.
4. Badve et al. *J Clin Oncol.* 2008.; Baehner et al. *J Clin Oncol.* 2010.

Join other breast cancer patients to learn about genomics and help transform patient care: MyOncotype.com