Criteria	Yes	No
Diagnosis Discrepancy		✓
Primary Tumor Site Discrepancy		✓
HIPAA Discrepancy		✓
Prior Malignancy History		✓
Dual/Synchronous Primary Noted		
Case is (circle): QUALIFIED	DISQUALIFIED	
Reviewer Initials RB	Date Reviewed: 9.29.11	

lw 10/21/11

UUID:0C0EEC9F-A715-4769-B58C-99D06C3C91F3
TCGA-A1-A0SJ-01A-PR

Redacted

ICD-O-3
carcinoma, infiltrating duct, NOS 8500/3
Site: breast, NOS C50.9 lw 10/21/11

Final Pathologic Diagnosis:

A. Sentinel lymph node #1, left axilla (count=4414), biopsy: Metastatic ductal carcinoma, 2 cm focus, in one (1/1); see comment.

B. Lymph node, left axilla, dissection: Metastatic ductal carcinoma in two of fourteen (2/14).

C. Lymph node, left axilla level III, biopsy: No tumor in one (0/1).

D. Left breast, modified radical mastectomy:
1. Invasive ductal carcinoma, SBR grade 3, 6.5 cm; see comment.
2. Ductal carcinoma in situ (DCIS), high grade, micropapillary and cribriform patterns, with comedonecrosis, narrowly excised; see comment.
3. Invasive carcinoma present at inked anterior-superior resection margin; see comment.
4. Microcalcifications in DCIS.
5. Non-proliferative fibrocystic change with apocrine metaplasia and microcysts.
6. Benign sclerosing papilloma.

E. Left breast, anterior/superior/medial margin, excision: Invasive ductal carcinoma, SBR grade 3, close to inked margin; see comment.

F. Skin, left breast nodule, excision:
1. Invasive ductal carcinoma, SBR grade 3, present in dermis, subcutaneous tissue and fibrous tissue; see comment.
2. Fibrous tissue, suggestive of scar, with invasive tumor; see comment.

G. Skin, newest anterior/superior/medial margin, excision: No significant pathologic abnormality, no tumor.

H. Left breast, new nipple margin, biopsy: Benign lactiferous ducts, no in situ or invasive tumor.

I. Non-sentinel lymph node #1, dissection: No tumor in two (0/2).

J. Non-sentinel lymph node #2, biopsy: No tumor in one (0/1).

Note: The tumor present in the main mastectomy specimen (part D) encompasses a 7.5 cm maximal area, which includes an area of tumor satellites adjacent to a 6.5 cm solid tumor mass. The tumor consists of infiltrating trabeculae, nests and glands of cells with ample and mostly clear cytoplasm, and large pleomorphic nuclei with nucleoli. Abundant mitotic figures are present. Ductal carcinoma in situ is also present with cribriform, micropapillary, and comedo patterns, and shows cytology similar to that of invasive tumor, with cells showing clear cytoplasm and pleomorphic high-grade nuclei. The DCIS is present only as scattered foci admixed within the invasive carcinoma itself. Material from the patient's prior biopsy (.) shows analogous features.

Invasive carcinoma are present at the inked anterior-superior margin of the main specimen (slides D2, D3; see details in synoptic below), however, the separately submitted additional margin (part E), shows invasive tumor that is narrowly (<0.5mm) excised (slide E8). In this specimen (part E), there is also tumor extending to the edges of the specimen that were indicated by the surgeon as not the new margin.

The skin nodule (part F) shows invasive ductal carcinoma (0.6 cm) within the subcutaneous tissue, dermis and immediately beneath the epidermis, where it is seen to involve an area of fibrosis that is suggestive of a skin scar. The tumor is within 0.5 mm of the excision margin, however, the separately submitted new skin margin (part G) shows no tumor.

The extensive clear cell features and nested architecture of the tumor are morphologic features that are often seen in renal cell carcinoma (RCC). Therefore, this possibility was considered and immunohistochemical studies were performed and evaluated on a lymph node metastasis (block B7) and interpreted as follows:

CD10: Negative (result does not support renal tumor).
Renal cell carcinoma Ab (RCC): Positive (result supports renal tumor).
Cytokeratin 7: Positive (result does not support renal tumor).
E-Cadherin: Positive (result does not support renal tumor).
Estrogen receptor: Negative (result does not support renal tumor).
Overall, while RCC Ab is positive, all other stains are indicative of this being metastatic breast carcinoma in a lymph node that has features mimicking RCC.

Breast Tumor Synoptic Comment

- Laterality: Left.
- Invasive tumor type: Invasive ductal carcinoma.
- Invasive tumor size: 6.5 cm maximum diameter (calculated by the presence of tumor in 4 consecutive 1.6 cm thick slices)
- Invasive tumor grade (modified Bloom-Richardson): 3.
  Nuclear grade: 3, 3 points.
  Mitotic count: >30 mitotic figures/10 HPF, 3 points.
  Tubule/papilla formation: >10% but <75%, 2 points.
  Total points and overall grade = 8 points = grade 3.
- Lymphatic-vascular invasion: present.
- Perineural invasion: None identified.
- Tumor necrosis: Present.
- Resection margins for invasive tumor: In the main mastectomy specimen (part D), invasive tumor is present at the inked anterior/superior margin, near the medial end (approximately 10 o'clock, 10 cm from the nipple; slides D2, D3). However, the separately submitted "anterior/superior/medial" margin shows tumor that is narrowly excised near one edge of the "new margin" of specimen part E (< 0.5 mm; slide E8).
  - Deep margin: Negative; (tumor is 1 cm away, on slide D6).
  - Medial margin: Negative; (tumor is 0.2 cm away, on slide D1).
  - Lateral margin: Widely clear.
  - Anterior/superior margin: Positive on main specimen (slides D2, D3).
  - Anterior/inferior margin: Widely clear.
  - Nipple bed margin: Widely clear.

- Ductal carcinoma in situ (DCIS) type: Comedo, cribriform, micropapillary.
- Ductal carcinoma in situ size: DCIS is present as scattered foci admixed with the invasive carcinoma.
- Ductal carcinoma in situ nuclear grade: High nuclear grade.
- Necrosis in DCIS: Comedonecrosis, focal (<1/3).
- Microcalcifications: Present, involving DCIS only.
- Resection margins for ductal carcinoma in situ: In the main mastectomy specimen (part D), DCIS is present < 0.5mm from the anterior/superior margin, near the medial end (approximately 10 o'clock, 10 cm from the nipple; slide D2). However, the separately submitted "anterior/superior/medial" margin has no definite DCIS in it.
  - Deep margin: Widely clear; (tumor is 1 cm away, on slide D6).
  - Medial margin: Negative; (tumor is 0.2 cm away, on slide D1).
  - Lateral margin: Widely clear.
  - Anterior/superior margin: Close; <0.5mm (slide D2).
  - Anterior/inferior margin: Widely clear.
  - Nipple bed margin: Widely clear.

- Lobular carcinoma in situ (LCIS): Not present.
- Lymph node status: Positive.
  - Number of positive lymph nodes: 3.
  - Total number sampled: 19.
- Diameter of largest metastasis: 2 cm.
- Extranodal extension: Not present.
- AJCC/UICC stage: pT3N1aMX.

- Nontumorous breast tissue: Cystic changes, apocrine metaplasia, papilloma.
- Nipple: Not present.
- Skin/dermis: Focus of invasive ductal carcinoma in dermis (see part F above).

An immunohistochemical test for estrogen and progesterone receptors was performed on block A1 (lymph node).

The test for estrogen receptors is positive. There is strong nuclear staining in >70% of tumor cells.

The test for progesterone receptors is positive. There is at least weak nuclear staining in >10% of tumor cells, with strong staining in ~5% of tumor nuclei.

Result of HER2/neu test: This carcinoma is indeterminate for HER2/neu oncoprotein over-expression.

An immunohistochemical assay was performed on block A1 using the CB11 monoclonal antibody to HER2/neu oncoprotein. The staining intensity of this carcinoma was 2 on a scale of 0-3 (HER2 test interpreted by Dr.

Carcinomas with staining intensity scores of *0 or 1* are considered *negative* for over-expression of HER2/neu oncoprotein.

Those with a staining intensity score of *2* are considered *indeterminate*. We and others have observed that many carcinomas with staining intensity scores of 2 do not show gene amplification. All carcinomas with staining intensity scores of 2 are therefore submitted for FISH testing. The results of the FISH test are issued directly from the molecular cytogenetics laboratory.

Carcinomas with staining intensity scores of *3* are considered *positive* for over-expression of HER2/neu oncoprotein. Tumors in this category show an excellent correlation between the results of immunohistochemical and FISH testing, and almost always show gene amplification.

Intraoperative Consult Diagnosis
FS1 (A) Sentinel lymph node #1, left axilla, biopsy: Carcinoma, approximately 2 cm (1/1). (Dr.

Clinical History
The patient is a year-old woman with left breast cancer. She undergoes mastectomy.

Gross Description
The specimen is received in ten parts, each labeled with the patient's name and unit number. Parts A-C are received fresh. Parts E-J are received in formalin.

Part A, additionally labeled " isists of a single, pink, unoriented tissue fragment measuring 2 x 1.8 x 0.6 cm. The specimen is bisected and entirely submitted for frozen section diagnosis 1, and subsequently submitted in cassette A1.

Part B, additionally labeled " consists of a brown-yellow, ovoid piece of fatty tissue with a stitch indicating the apex, measuring 8.5 x 8.5 x 3.3 cm. Also in the specimen container are two fragments of yellow-tan, soft tissue measuring 5.5 x 4.5 x 2.5 cm in aggregate. Multiple lymph nodes are found in the specimen. Lymph nodes from the main specimen are submitted from apex to base and all lymph nodes are submitted as follows:

Cassettes B1-B6: Multiple whole lymph nodes.
Cassette B7: One lymph node, bisected.
Cassette B8: Multiple whole lymph nodes from smaller tissue fragment.

Part C, additionally labeled nsists of two fragments of tan-yellow, fatty tissue measuring 3.5 x 3.5 x 2.5 cm in aggregate. No lymph nodes are identified in the specimen. The specimen is entirely submitted in cassettes C1-C3.

Part D is additionally labeled It consists of a mastectomy, without skin, nipple, or areola, that has been previously inked and incised prior to receipt in Pathology. Short suture and long suture are present, in additional to a blue nylon suture present at the anterior-mid area. Following the provided orientation, the specimen measures

22 cm from medial to lateral, 19 cm from superior to inferior, and 6 cm from anterior to posterior. The designated nipple/areolar bed measures 3.5 x 3.5 cm in area. The specimen has been previously inked as follows: posterior aspect in black, anterior superior blue, and anterior inferior green. A 14 cm long previous incision is present on the posterior surface running vertically that is 5 cm deep and reveals an irregular firm area in the superior half of the cut surface (upper inner quadrant). The specimen is further serially sectioned, from medial to lateral, with slice 1 as medial and slice 13 as lateral and the previous incision present between slice 5 and slice 6. An irregular, ill-defined, firm, white-to- tan lesion is present in slices 1 through 6, encompassing a 8 cm dimension from medial to lateral, 5 cm from superior to inferior, and 2.5 cm from anterior to posterior. The majority of this lesion is present as a solid area in slices 3 through 6 (6.5 cm from medial to lateral). In slices 1 and 2, the lesion is present as an area of multiple satellite nodules, of up to 0.4 cm each, directly adjacent to the solid area. The lesion overall abuts the anterior- superior margin and is 0.5 cm from medial margin, 1.2 cm to deep margin, 3 cm to anterior inferior, 13 cm to lateral, 2.5 cm to the nipple bed, 3.4 cm to superior edge, and 8.5 cm to inferior edge. Two 0.5 cm, spherical cystic cavities are present within or adjacent to the lesion, the first in the superior half of slices 4 and 5, and the second in the mid-portion of slice 5. Up to a 0.5 cm thickness of muscle is present in focal areas of the posterior aspect. Remainder of the specimen consists almost entirely of unremarkable yellow fat. There are thin, delicate strands of white, fibrous tissue present throughout most of the remainder of the specimen. Representative sections are submitted as follows:

Cassette D1: Representative medial margins, perpendicular.
Cassette D2: Anterior-superior margin, slice 2, in relation to nodular masses.
Cassette D3: Anterior-superior margin, slice 3, in relation to mass.
Cassette D4: Anterior-superior margin, slice 4, including cavity.
Cassette D5: Deep margin in relation to mass, from slice 5.
Cassette D6: Deep margin, slice 6, with muscle.
Cassette D7: Superior edge, slice 4.
Cassette D8: Inferior edge, slice 5.
Cassette D9: Anterior-inferior margin, slice 5.
Cassette D10: Nipple bed margin, slice 6.
Cassette D11: Lateral margin, perpendicular.
Cassette D12: Representative section of the mass from slice 5, with cavity.
Cassette D13: Inferior edge of mass, slice 6.
Cassette D14: Representative upper outer quadrant, slice 8.
Cassette D15: Representative upper outer quadrant, slice 10.
Cassette D16: Representative lower inner quadrant, slice 6.
Cassette D17: Representative lower inner quadrant, slice 4.
Cassette D18: Representative lower outer quadrant, slice 9.
Cassette D19: Representative lower outer quadrant, slice 8.

Part E is additionally labeled .t consists of a segment of adipose tissue containing a single suture. The requisition form indicates the suture marks the new margin. The specimen is 4.5 x 4 x 2 cm with the suture present at one longitudinal end of the specimen. There is a 1.5 cm maximal dimension area containing irregular, white-firm mass that is 2 cm from the new margin. In addition, there are 2-3 0.2 to 0.3 cm firm nodules present abutting the new margin. The new margin is inked black. The remainder of the surfaces are inked blue and representative sections including the entire new margin are submitted as follows:

Cassettes E1-E8: Entire new margin.
Cassette E9: Representative section of 1.5 cm lesion.

Part F is additionally labeled It consists of a skin ellipse that is 1.2 x 0.6 cm in area and 0.8 cm in maximal depth, that contains an irregular 0.5-cm area of firm, white nodules. The resection margins are inked blue and the specimen is entirely submitted as follows:

Cassette F1: Tips.
Cassette F2: Remainder of specimen.

Part G is additionally labeled It consists of a 1.4 x 1.1 x 0.2 cm segment of tissue with apparent skin on one broad surface. A 0.7 cm central hole is present. The non-skin surfaces are inked blue and the specimen is entirely submitted as follows:

Cassette G1: Tips.
Cassettes G2-G3: Remainder of specimen.

Part H is additionally labeled It consists of a segment of irregular, brown soft tissue sutured to a Telfa pad. There is a single long suture present on the non-Telfa surface. The requisition form indicates the stitch marks new margin (margin side up) and this new margin surface is inked black. The opposite surface (Telfa surface) is inked blue. The specimen is bisected and entirely submitted in cassette H1.

Part I, additionally labeled consists of one soft and firm, tan-yellow piece of fatty tissue measuring 2.5 x 2 x 0.6 cm. The specimen is trimmed and extensively searched for lymph nodes. One candidate lymph node is found; this is inked blue and bisected, and entirely submitted in cassette I1. The remaining yellow fatty tissue is submitted in cassette I2.

Part J, additionally labeled consists of one soft and firm, tan-light brown tissue fragment measuring 2 x 1.6 x 0.7 cm. The specimen is inked black and bisected, and entirely submitted in cassettes J1-J2.

The immunoperoxidase stain(s) reported above were developed and their performance characteristics determined by the . They have not been cleared or approved by the U. S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. These tests are used for clinical purposes. They should not be regarded as investigational or for research. This laboratory is certified under the Clinical Laboratory Improvement Amendments of 1988 ("CLIA") as qualified to perform high-complexity clinical testing.

/Pathologist
Signed:

Fee Codes:

Other Specimens

Specimen Class: **Status:** Signed Out **Accessioned:**
Signed Out:

Specimen(s) Received:
Final Diagnosis
Review of

A. Left breast, "#1 with calcs," biopsy:
1. Ductal carcinoma in situ, high grade, solid and papillary patterns with comedo necrosis and extension to lobules; see comment.
2. Microscopic focus (< 1mm) suspicious for invasion; see comment.
3. Microcalcifications present in association with ductal carcinoma in situ.

B. Left breast, "#2 with calcs," biopsy:
1. Invasive ductal carcinoma; see comment.
2. Ductal carcinoma in situ, high grade, solid and papillary patterns with comedo necrosis and extension to lobules; see comment.
3. Microcalcifications present in association with ductal carcinoma in situ and stroma.

A. Left breast "nodule," biopsy:
1. No in situ or invasive carcinoma identified.
2. Fibroadenoma.

END OF REPORT