

**2019**

**BREAST SEMINAR SERIES**

**Faculty**

**LÁSZLÓ TABÁR, MD, FACR** (Hon) Course Director  
*Professor emeritus of Radiology and*

**ALFONSO FRIGERIO, MD.**

*Screening Expert*

**Detection and Diagnosis of Breast Diseases  
Using the Multimodality Approach**

**A FULLY INTERACTIVE,  
UNIQUE LEARNING EXPERIENCE**

*June 18-21, 2019*

**TORINO, Italy**

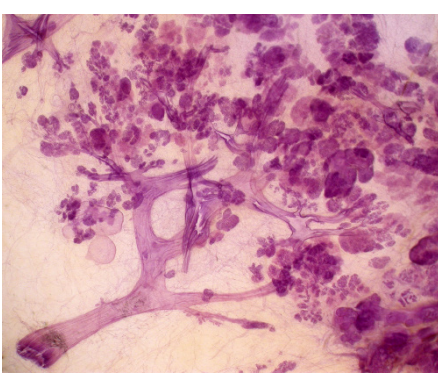
*Centro Congressi Unione Industrialie  
Via Vela 17, Torino*

**NEW  
course  
design**

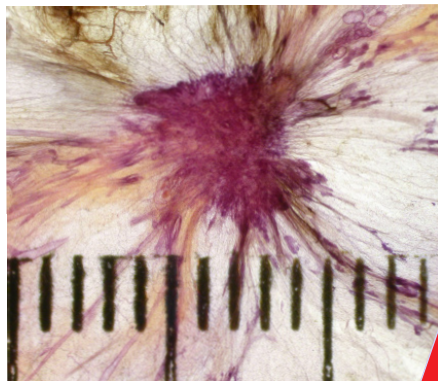
*Designed for:*

**Radiologists • Surgeons • Pathologists  
Gynecologists • Radiology Technologists**

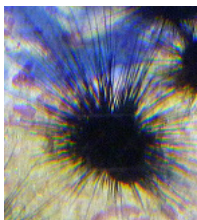
*This course provides extensive knowledge about diagnostic  
breast imaging, differential diagnosis of breast diseases, impli-  
cations for management and newest diagnostic technologies*



3D image of the breast tissue



<10 mm invasive breast cancer



Sea urchin

**26** hours of  
Category I CME  
credits



2019

BREAST SEMINAR SERIES of MEI

Detection and Diagnosis of Breast Diseases  
Using the Multimodality Approach. An interactive course.

**László Tabár, MD, FACR (Hon)**  
*Course Director*

## FACULTY



**László Tabár, MD, FACR (Hon).**  
Course Director

*Professor emeritus of Radiology,  
Department of Mammography  
Falun, Sweden*



**Alfonso Frigerio, M.D.**

*Director of Mammography Screening  
Regional Reference Center for  
Breast Cancer Screening,  
CPO-Piemonte,  
AOU Città della Salute e della Scienza,  
Torino, Italy*



Images from the non-profit Tabar Foundation for Research and Education for Breast Cancer

[www.tabarfoundation.org](http://www.tabarfoundation.org)

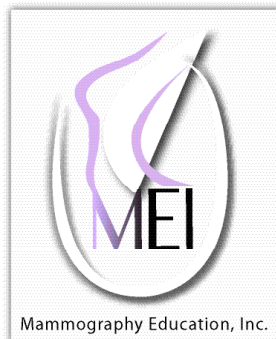


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Mammography Education, Inc. is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians. Mammography Education, Inc. designed these medical education activities for a maximum of **26 credit hours in Category I** of the Physicians' Recognition Award of the American Medical Association. Each physician should claim only those hours of credit that he / she actually spent in the educational activity.

### NEW COURSE DESIGN

- \* The lectures on each major subject will be followed by **interactive screening sessions** consisting of a mixture of normal and early cancer cases presented on the large screen exactly as they appear on a viewing station at screening. Using a specially provided polling program downloaded to each participant's smartphone or tablet, the attendees will be asked to vote anonymously on each case. The aggregate results will appear instantly for discussion and evaluation. This new course design gives immediate feedback demonstrating the effectiveness of various screening methods.
- \* During the course the attendees will progressively improve their interpretive expertise, as they learn the full spectrum of normal breast images, with all important findings explained with the help of 3-dimensional histology images.
- \* These skills will lead to fewer call-backs and greater confidence in reading a large number of mammograms.
- \* Immediate feedback and discussion of every case throughout every reading session.
- \* Special emphasis will be placed on finding early phase breast cancers.
- \* **All abnormal cases are fully worked up and the complete imaging workup will be presented in detail, including ultrasound, MRI and large section histopathology.**

### CREDITS

We would like to thank the sponsors for their support of the teaching seminars of Mammography Education, Inc (list of vendors will be presented at the beginning of the course)





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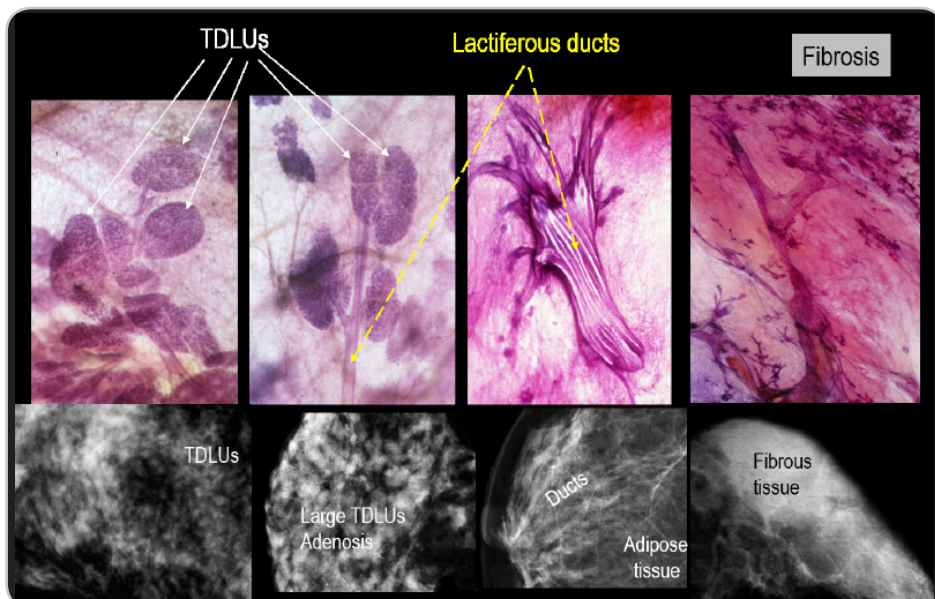
Detection and Diagnosis of Breast Diseases  
Using the Multimodality Approach. An interactive course.

László Tabár, MD, FACR (Hon)  
Course Director

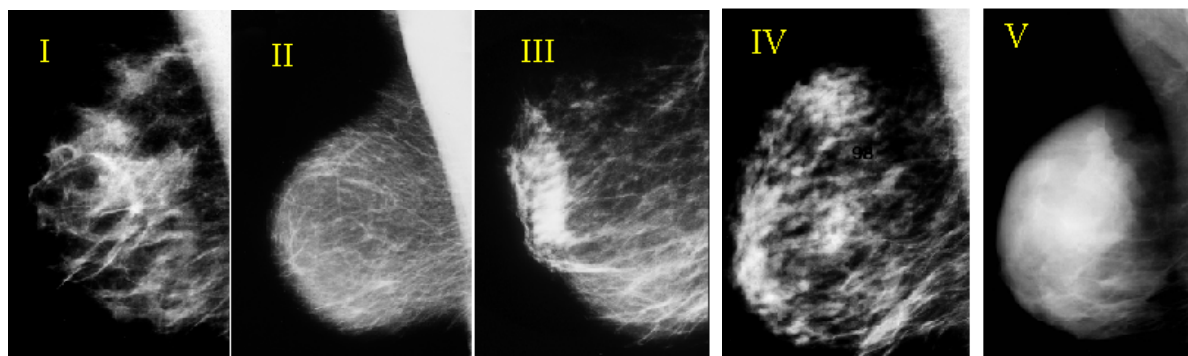
## Day 1 Morning lectures between 8:30 AM - 12:00 PM. Breaks: 10:00 AM, 11:00 AM

8:30 INTRODUCTION FOLLOWED BY DIDACTIC LECTURES COVERING:

- A NEW ERA in the DIAGNOSIS and TREATMENT of BREAST CANCER. A SHORT HISTORY.
- **HOW TO READ A MAMMOGRAM.** THE BASIS FOR SKILLFUL AND EFFICIENT INTERPRETATION OF THE MAMMOGRAPHIC IMAGE
- Correlating 3-dimensional, subgross anatomy with mammography of the normal breast results in **increased confidence in reading a mammogram** and **finding small abnormalities**. Special training in large format thin and thick section (3D) histopathologic correlation enables the radiologist to account for every linear and nodular density on the mammogram.



The breast, unlike any other organ, has **five structurally different mammographic parenchymal patterns**.



12:00 PM - 1:00 PM Lunch





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Detection and Diagnosis of Breast Diseases  
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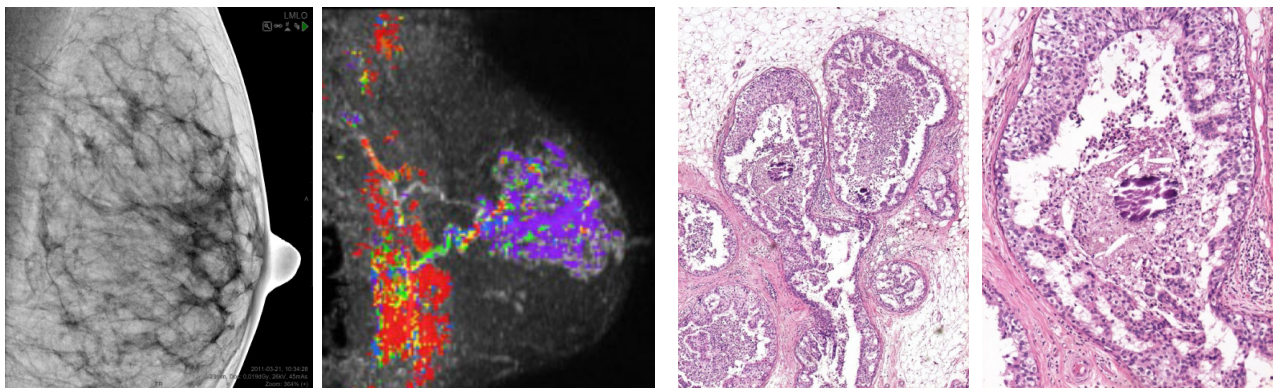
**László Tabár, MD, FACR (Hon)**  
*Course Director*

**Day 1** Afternoon lectures: 1:00 PM - 5:30 PM. Breaks at 2:30 and 3:30 PM

**ALGORITHM FOR CLASSIFYING BREAST DISEASES ACCORDING TO THEIR SITE OF ORIGIN**

**HOW TO FIND THE INVASIVE BREAST CANCER WHEN IT IS STILL SMALL.** *Malignant stellate and circular/oval-shaped lesions originating from the TDLUs (AAB):* clinical presentation, histology, mammographic - MRI - ultrasound appearance and outcome.

- A systematic method for viewing mammograms. Areas on the mammogram where most breast cancers will be found. Viewing dense breasts. Viewing relatively easy-to-read breasts.
  - The role of hand-held ultrasound / 3D automated ultrasound / MRI in the detection and workup of the findings. The multimodality approach
- **Interactive screening session:** Using what has just been taught, each participant will assess a mixture of normal and early cancer cases, and vote anonymously using a smartphone or tablet. The combined results will appear instantly for discussion. and evaluation.



**Example:** Multifocal invasive and *in situ* carcinoma, where the extensive micropapillary cancer originating from the major ducts was well demonstrated on breast MRI.

5:00 PM. End of Day 1.



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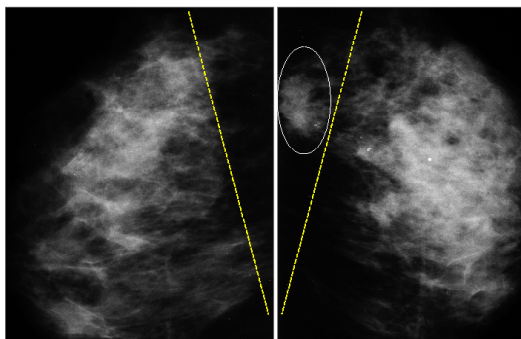
Detection and Diagnosis of Breast Diseases  
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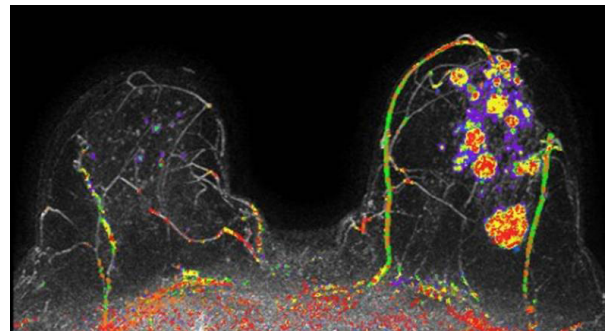
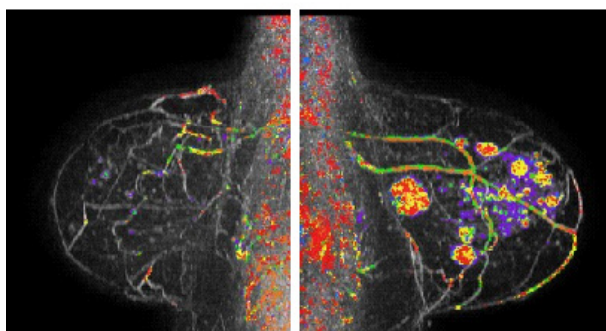
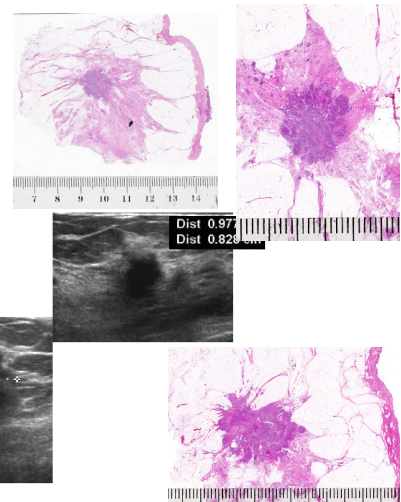
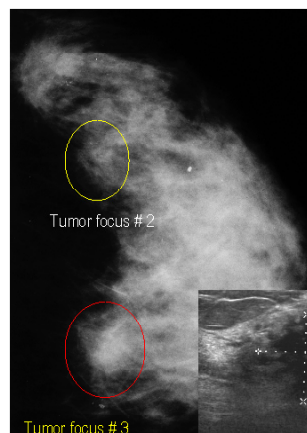
## Day 2 Morning lectures between 8:30 AM - 12:00 PM. Breaks: 10:00 AM, 11:00 AM

**8:30** HOW TO FIND THE INVASIVE BREAST CANCER WHEN IT IS STILL SMALL. SCREENING COMBINED WITH AN ANALYTICAL APPROACH FOR THE DIFFERENTIAL DIAGNOSIS OF STELLATE / SPICULATED LESIONS (AAB) *Continuation*

- A systematic method for viewing mammograms. Areas on the mammogram where most breast cancers will be found. Viewing dense breasts. Parenchymal contour changes, non-calcified architectural distortion, **unifocal / multifocal / diffuse breast cancers**.
- **Interactive screening session:** Using what has just been taught, each participant will assess a mixture of normal and early cancer cases, and vote anonymously using a smartphone or tablet. The combined results will appear instantly for discussion and evaluation.



Multifocal invasive and in situ carcinoma  
on an area measuring 180X60 mm pN 4/9



12:00 PM - 1:00 PM **Lunch**



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Course Director

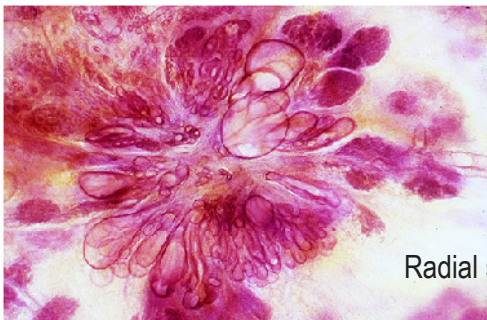
**Day 2** Afternoon lectures: 1:00 PM - 5:00 PM. Breaks: 2:30 PM and 3:30 PM

**1:00 AM ASYMMETRIC DENSITIES ON THE MAMMOGRAM**

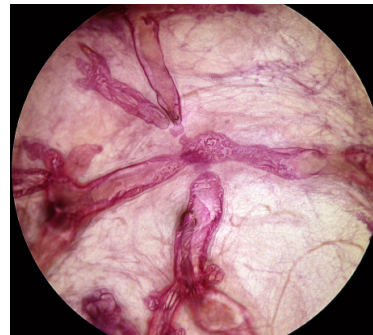
- Didactic workup of *non-specific asymmetric densities without architectural distortion*
- Didactic workup of *non-specific asymmetric densities with architectural distortion*

ANALYSIS of **BENIGN RADIATING STRUCTURES** on the mammogram, originating in the ducts

- **Radial scar**. A suggested algorithm for the workup of stellate lesions



Radial scar

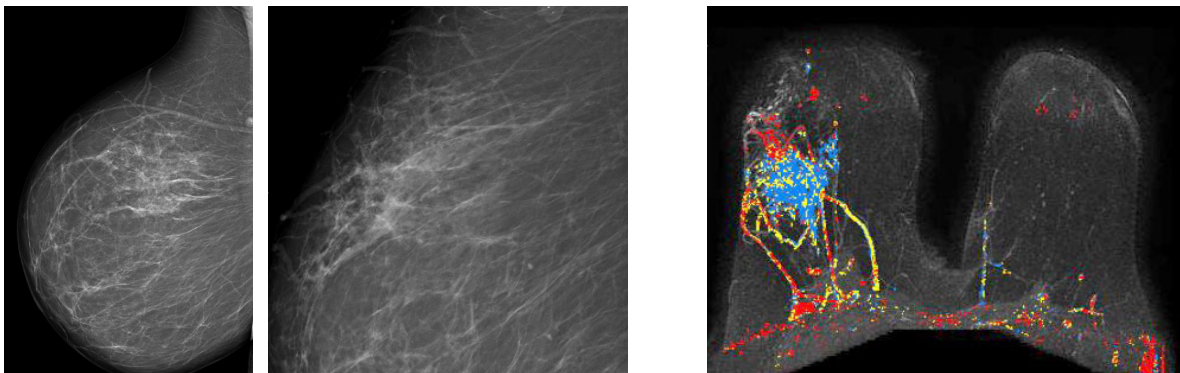


Neoductogenesis

ANALYSIS of **MALIGNANT LESIONS** PRESENTED as non-calcified RADIATING STRUCTURES on the mammogram. Clinical presentation, mammographic appearance and outcome:

- **Duct forming invasive carcinoma / Neoductogenesis** cases presenting on the mammogram as architectural distortion. *The role of MRI in diagnosing diffuse breast cancer*. A suggested algorithm for the workup of lesions with architectural distortion.

**Interactive session for detecting architectural distortion on the mammogram.**



Non-calcified architectural distortion: extensive duct forming invasive cancer

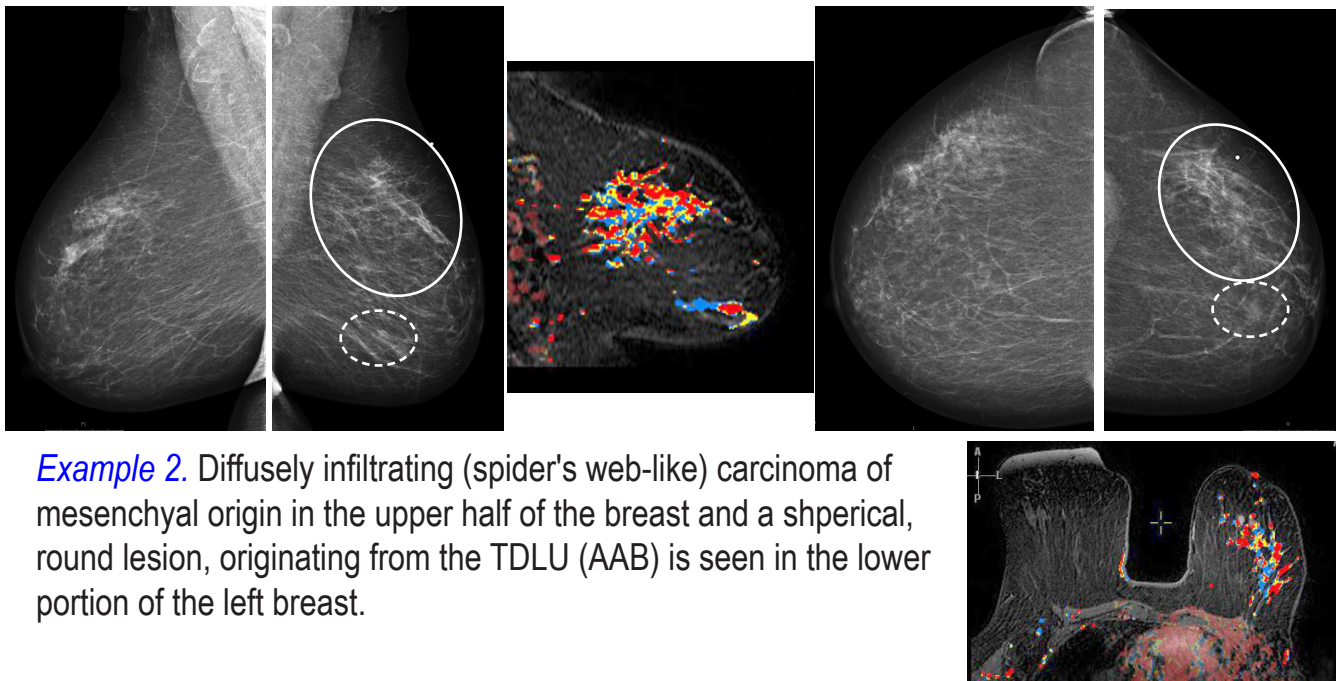
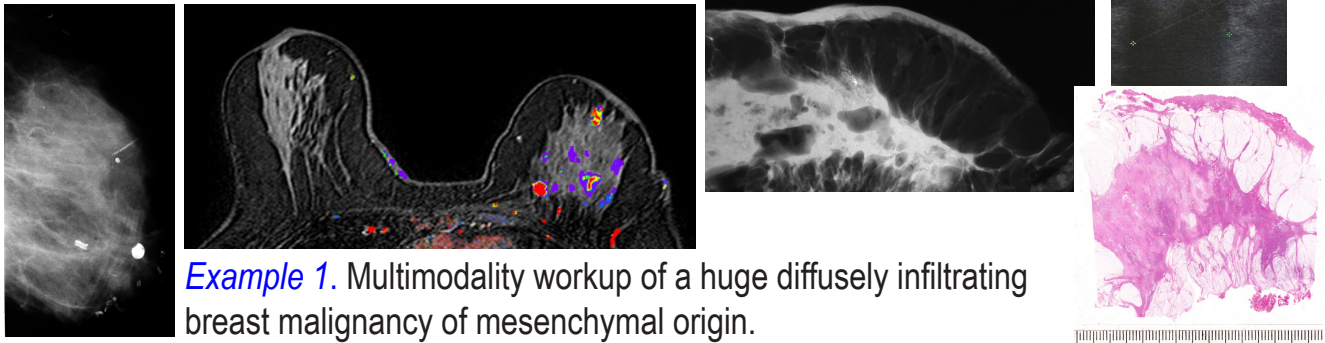
5:00 PM. End of lectures Day 2.



**Day 3** Morning lectures: 8:30 AM - 12:00 PM. Breaks: 10:00 AM and 11:00 AM

**8:30 PM** ANALYSIS of MALIGNANT LESIONS PRESENTING as RADIATING STRUCTUREs on the mammogram. Clinical presentation, mammographic appearance and outcome, cont.

2) Diffuse forms of invasive breast cancer: the most deceptive and frequently missed cancer of the breast. The value of ultrasound and MRI in finding and diagnosis invasive lobular cancer subtypes. Case demonstrations, histologic-imaging correlation. Long-term outcome.



**Interactive session for detecting architectural distortion on the mammogram.**

12:00 PM - 1:00 PM Lunch

**Day 3**

Afternoon lectures: 1:00 PM - 5:00 PM.

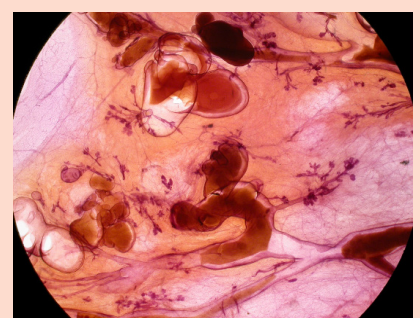
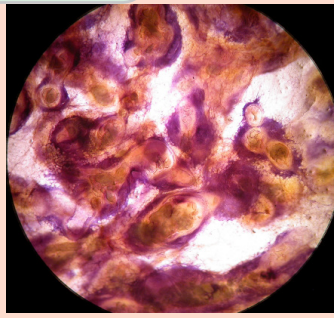
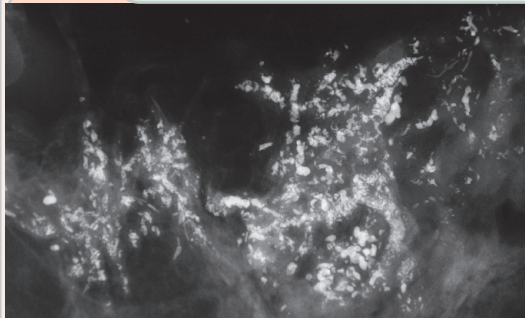
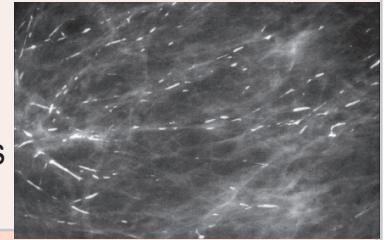
Breaks at 2:30 and 3:30 PM

**1:00 PM** INTERACTIVE LECTURE SERIES WILL COVER THE FOLLOWING TOPICS.

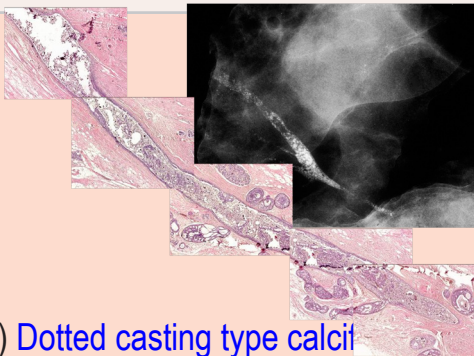
**ALGORITHM FOR CLASSIFYING BREAST DISEASES ACCORDING TO THEIR SITE OF ORIGIN**

**Breast diseases originating in the major ducts**

- **Benign type calcifications** originating in the major ducts
  - a) Secretory disease type calcifications
- **Malignant type calcifications** originating in the major ducts
- **Interactive calcification analysis.**

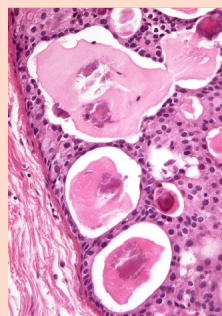
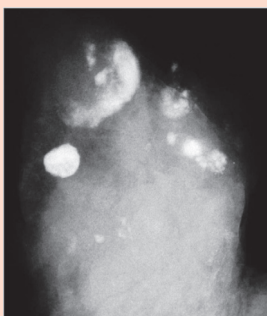


a) **Fragmented casting type calcifications.**

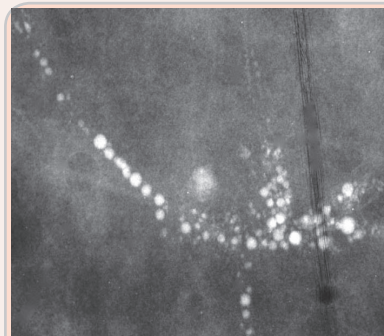


b) **Dotted casting type calcifications**

- \* **Four different malignant type calcifications** developing in the major ducts: **a)** fragmented casting type **b)** dotted casting type **c)** skipping stone-like **d)** pearl necklace-like.
- \* The concept of **neoductogenesis**. Long-term follow-up results. New aspects, correct terminology.
- \* The role of breast MRI examination in demonstrating the extent of Gr 3 in situ carcinoma.
- \* Mammographic/3D histologic correlation helping to explain the underlying pathophysiology and outcome.



c) **Skipping stone-like calcifications**



d) **Pearl necklace-like calcifications**

**5:00** End of the lectures for Day 3

**5:05** ART HISTORY LECTURE: -A FRIGERIO

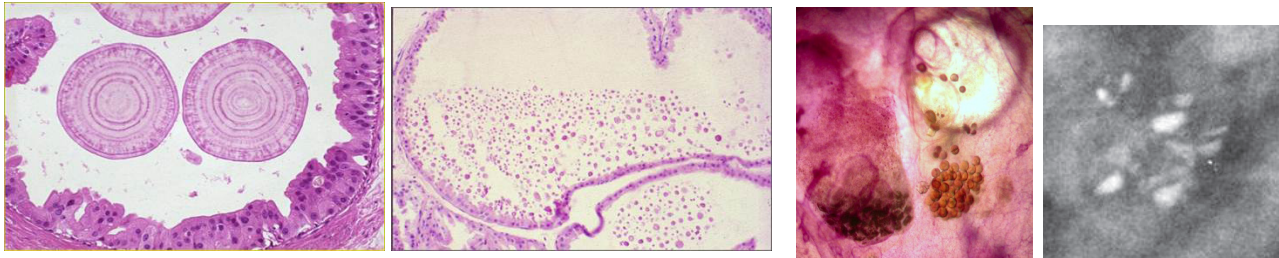


**Day 4 Morning lectures: 8:00 AM - 1:00 PM.**

**Breaks at 10:00 and 11:00 AM**

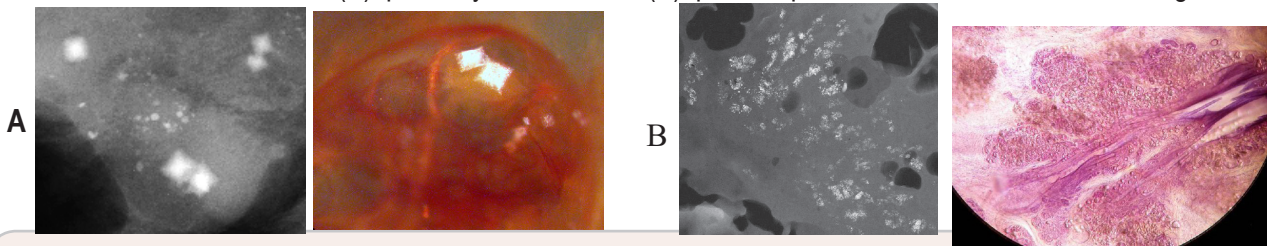
**8:00 AM** ALGORITHM FOR CLASSIFYING BREAST DISEASES ACCORDING TO THEIR SITE OF ORIGIN

- **Benign breast diseases originating in the TDLU** and associated with calcifications on the mammogram
  - **Fibrocystic change. Fibroadenoma. Different types of adenosis.** Understanding pathophysiology leading to calcified and non-calcified hyperplastic breast changes.

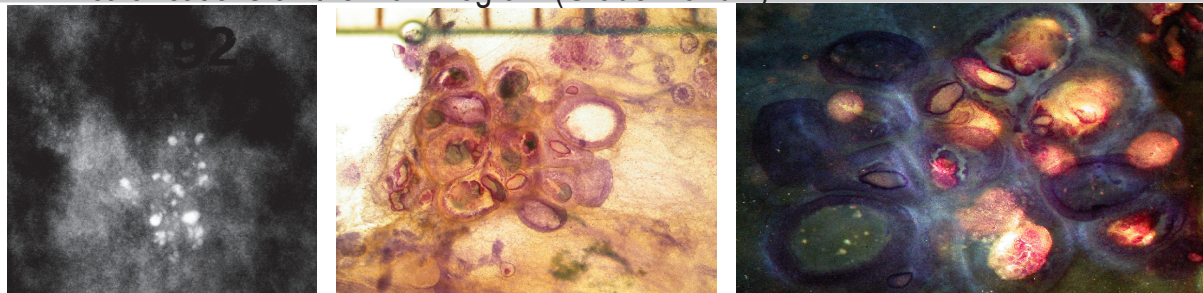


Conventional and 3D histology images of small breast cysts containing sediment of psammoma body-like calcifications, seen as "teacup-like calcifications on the mammogram.

- Detailed analysis of calcifications associated with hyperplastic breast changes  
Weddellites (A), powdery calcifications (B), pleomorphic calcifications on the mammogram.



- **Malignant breast diseases originating in the TDLU(s)** and associated with calcifications on the mammogram (Grade 1 and 2).



Grade 2 cancer *in situ*: Mammographic / 3-D histologic / MRI correlation of cases with crushed stone-like/pleomorphic calcifications on the mammogram.

**1:00 End of the course**





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*Course Director*

**For more information and  
registration please contact:**

**Mammography Education, Inc.  
4429 E. Spur Drive  
CAVE CREEK, AZ 85331, USA**

Phone: (480) 419 0227

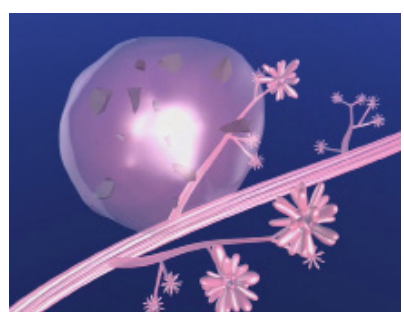
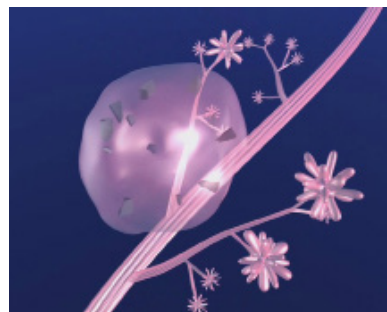
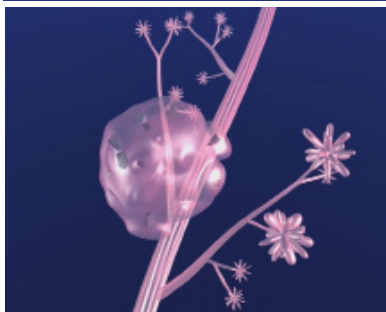
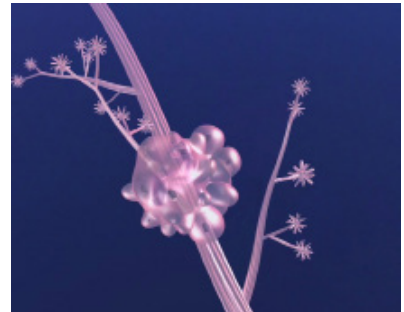
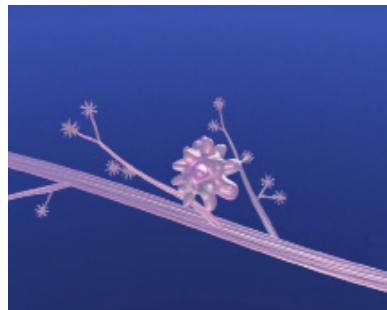
Fax: (480) 419 0219

e-mail: [info@mammographyed.com](mailto:info@mammographyed.com)

Internet: [www.mammographyed.com](http://www.mammographyed.com)

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Computer simulation images of the development of Grade 2 *in situ* carcinoma within the TDLU. The lobule becomes gradually distended and deformed. Calcifications are formed within the necrotic debris and are seen on the mammogram as **crushed stone-like calcifications**.



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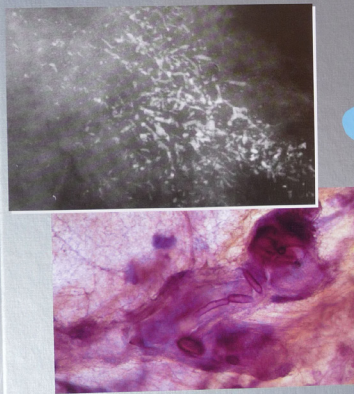
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**László Tabár, MD, FACR (Hon)**  
*Course Director*

## Breast Cancer Early Detection with Mammography

Casting Type Calcifications: Sign of  
a Subtype with Deceptive Features

László Tabár  
Tibor Tot  
Peter B. Dean

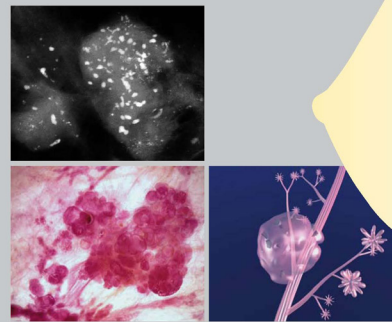


Thieme

## Breast Cancer Early Detection with Mammography

Crushed Stone-like Calcifications:  
The Most Frequent Malignant Type

László Tabár  
Tibor Tot  
Peter B. Dean



Thieme

[www.thieme.com](http://www.thieme.com)

## Breast Cancer The Art and Science of Early Detection with Mammography

László Tabár  
Tibor Tot  
Peter B. Dean



Interpretation,  
Correlation,  
and Pathologic Correlation

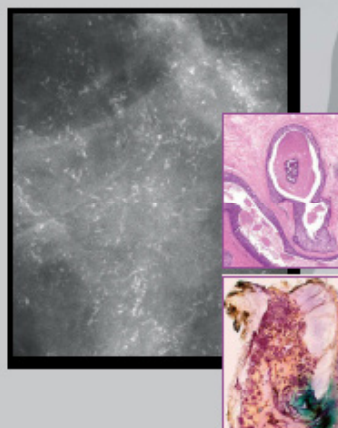
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## Teaching Atlas of Mammography

László Tabár  
Peter B. Dean

With the contribution of Tibor Tot

4th edition



Thieme





2019

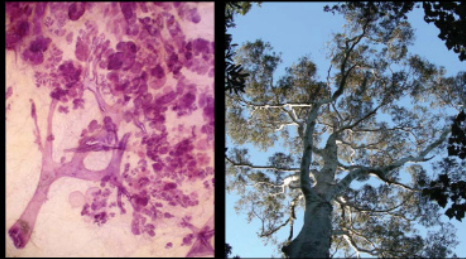
BREAST SEMINAR SERIES of MEI

Detection and Diagnosis of Breast Diseases

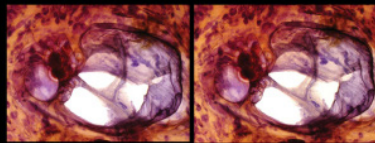
Using the Multimodality Approach. An interactive course.

**László Tabár, MD, FACR (Hon)**  
Course Director

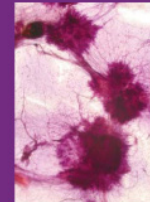
*László Tabár, MD*  
*Tibor Tot, MD, Peter B. Dean, MD*



## Understanding the Breast in Health and Disease



In 3D

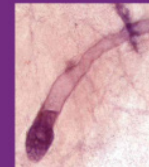


Multifocal breast cancer



Sea urchins

In 3D



In situ ductal carcinoma

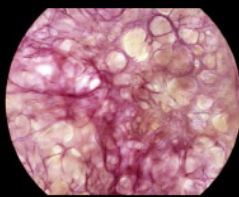


Banana flower

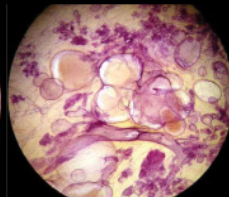
The basic structural elements of the female breasts are illustrated here in true 3-dimensional (3D) images and described in this Volume I by three breast cancer experts with decades of experience in the diagnosis of breast diseases. These images provide the best way to understand the great variability of the normal breast structure and the changes brought about by benign and malignant diseases.

[www.mammographyed.com](http://www.mammographyed.com)

*László Tabár, MD,*  
*Tibor Tot, MD, Peter B. Dean, MD,*  
*Miklós Tarján, MD*

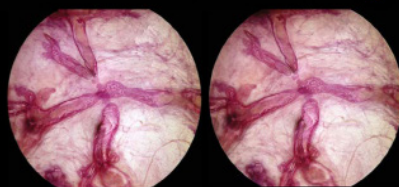


cysts in a prostate

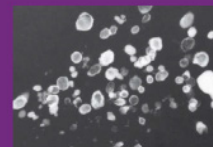


breast cysts

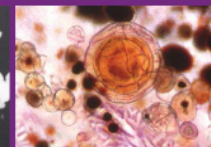
## Prostate and Breast: Brother and Sister Organs



In 3D



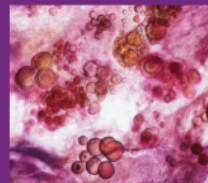
Prostate calcifications



Laminated calcifications  
in the prostate



In 3D



Laminated calcifications in  
the breast

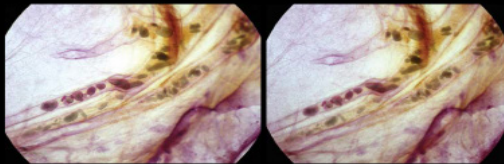


Rowan berries

Even as the risk of getting prostate and breast cancer is rising, early detection through screening and treatment in an early stage are significantly lowering the risk of dying from these diseases. This series of 3D books aims to empower both men and women with knowledge about their health. Although all of us are at risk of developing cancer or less serious problems in one or the other of these two organs, education will help us seek the benefits provided by modern health care and expect excellence from health care providers.

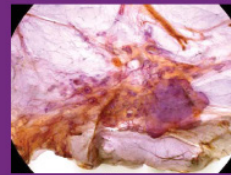
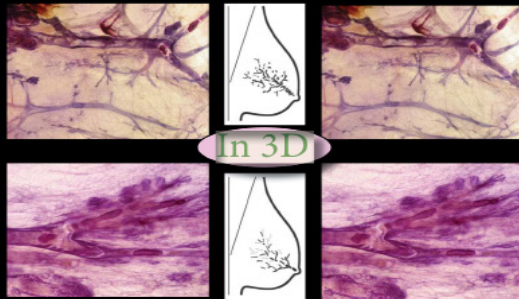


László Tabár, MD  
Tibor Tot, MD, Peter B. Dean, MD



Breast cancer of ductal origin with microcalcifications

## Ductal Adenocarcinoma of the Breast (DAB), Part 1



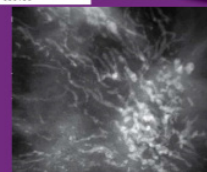
8 mm poorly differentiated invasive breast cancer associated with neoductogenesis (DAB)



A photograph reminiscent of neoductogenesis with associated tiny invasive tumors



In 3D



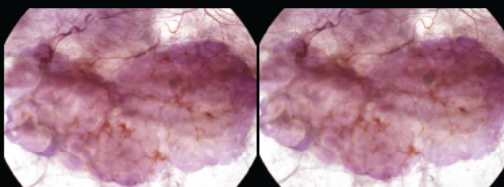
Fragmented casting type calcifications make the cancerous duct-like structures visible on the mammogram.



Neoductogenesis is a frequent phenomenon in the plant world

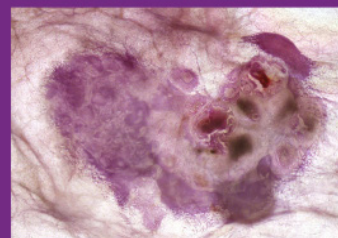
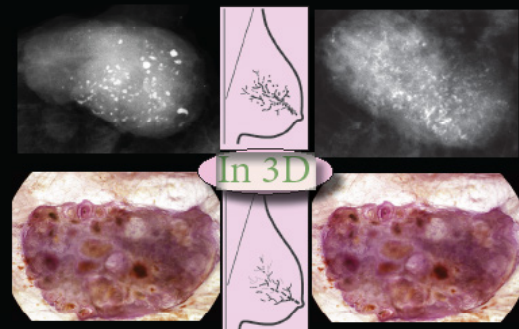
The mammogram is a true representation of the structural changes induced by the genetic constellation of each breast cancer subtype. The mammographic/MRI/ultrasound presentation of a particular subtype reflects the nature and extent of the underlying disease process, and when correctly interpreted, can guide patient management and help in predicting the long-term outcome. This information is available at the moment of diagnosis, without the additional expense and time necessary for molecular and immunohistochemical analysis.

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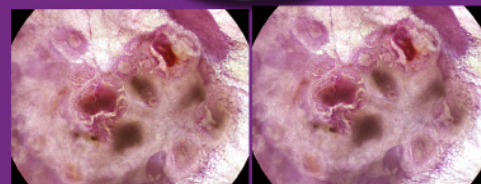
An axillary lymph node populated with metastases mimicking *in situ* cancer

## Ductal Adenocarcinoma of the Breast (DAB), Part 2



Metastases within an axillary lymph node mimicking cancer *in situ*

In 3D



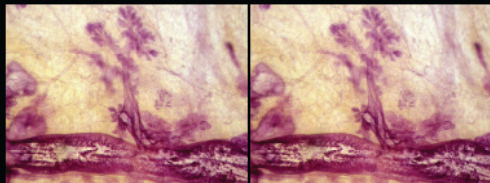
Stereoscopic image pair of the DAB with calcifications within a lymph node

Breast cancers originating from the major milk ducts (breast cancer of ductal origin, DAB) occasionally cause axillary lymph node metastases which are similar in appearance at histology to DAB in the breast. Regardless of whether or not the myoepithelial cell layer is demonstrable, the decisive question is how do the duct-like structures grow inside the lymph nodes? Although the histopathologic appearance will be termed by pathologists as invasive cancer, i.e., when found in the prostate or in the axillary lymph node(s), a similar histopathologic appearance is termed 'DCIS' when found in the breast. In reality, we face 'duct forming invasive cancer' with poor outcome (neoductogenesis) in the breast, in the prostate and in the axillary nodes.



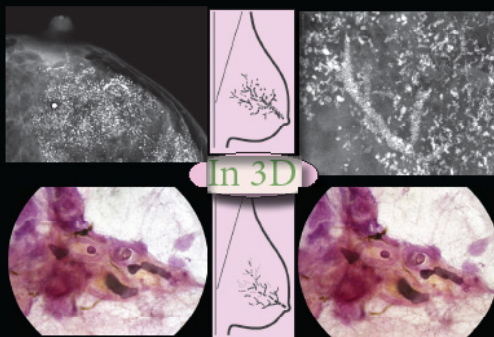
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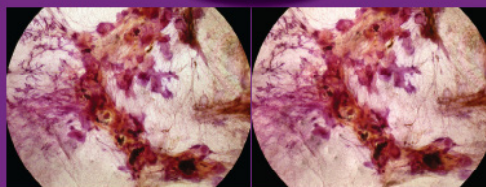
Micropapillary breast cancer of ductal origin associated with a normal TDLU

## Ductal Adenocarcinoma of the Breast (DAB), Part 3



Neoductogenesis (DAB) associated with angiogenesis

In 3D



Normal atrophic ducts and cancerous, distended ducts side by side

Breast cancers that originate in the major milk ducts (ductal adenocarcinoma of the breast, DAB) are diffuse and often extensive. The disease may occupy an entire lobe from the nipple to the chest wall, and frequently extends close to the skin. For these reasons, breast conserving surgery and skin or nipple sparing mastectomy of DAB cases carry a higher risk of local/regional/distant recurrence. In addition: 1) a considerable portion of the disease may lack calcifications, often occult for the imaging methods. 2) This subtype of breast cancer is less responsive to postoperative radiotherapy.

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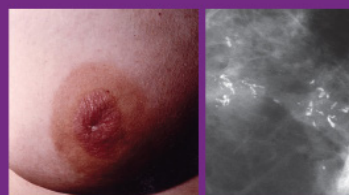
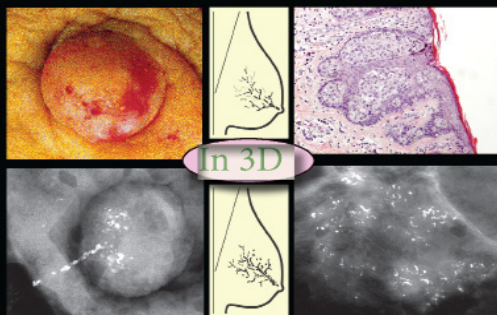
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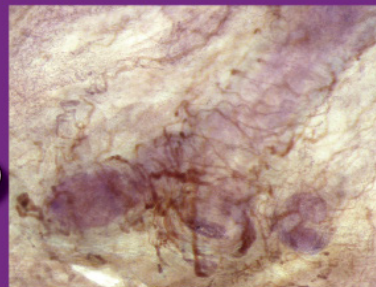
Paget's disease of the nipple

Paget's cells in the epidermis of the nipple

## Ductal Adenocarcinoma of the Breast (DAB), Part 4



Paget's disease of the nipple and breast cancer of ductal origin



Cancer-filled duct in Paget's disease with angiogenesis

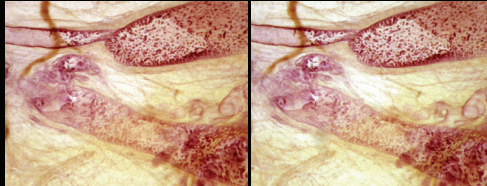
In 3D

One of the features which is unique to breast cancers originating from the major ducts (DAB) is **Paget's disease of the breast**. It was first described by the British pathologist, James Paget in 1874. He described 14 cases of breast cancer associated with an eczema-like skin change of the nipple and areola. Almost 1% of all breast cancers present with Paget's disease of the nipple, and the diagnosis is confirmed by histologically demonstrating the Paget cells of the affected epidermis. The underlying breast cancer can be best demonstrated by combining all breast imaging methods. Of these, breast MRI is the most sensitive, showing the presence and true extent of the underlying DAB, often before calcifications can be detected on the mammogram.



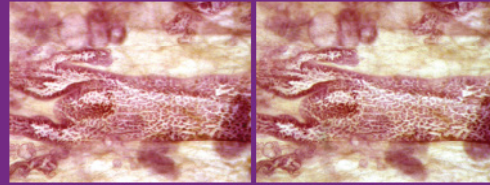
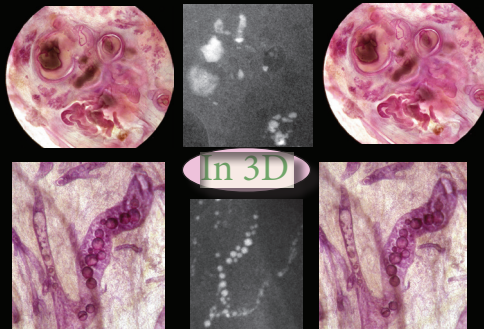
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## Ductal Adenocarcinoma of the Breast (DAB), Part 5

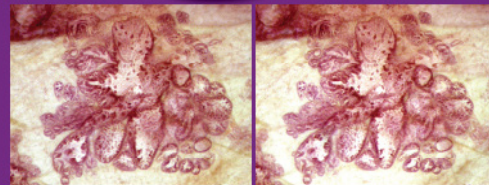
Fluid producing DAB subtypes associated with calcifications



Fluid producing micropapillary breast cancer of ductal origin (DAB)



In 3D



Neoductogenesis in micropapillary breast cancer of ductal origin (DAB)

This volume describes the subtypes of breast cancers that arise in the major ducts, produce a viscous, proteinaceous fluid. Little or no necrosis is present. The calcifications formed within the fluid have characteristic, but deceptively benign appearance, although the malignancy may extend throughout an entire lobe. This book will help identify these deceptive cases through correlating the mammographic/ultrasound/MRI presentation with large / thick section (3D) histology.

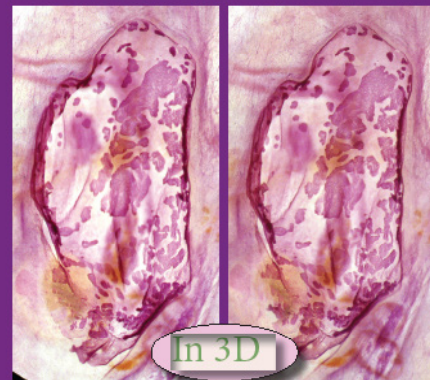
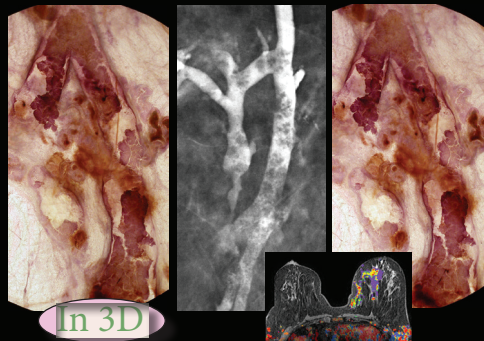
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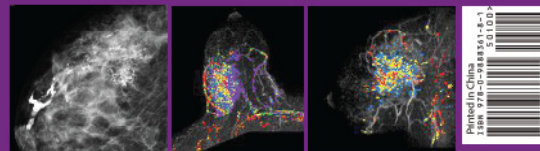


Bloody and serous nipple discharge

## Ductal Adenocarcinoma of the Breast (DAB), Part 6



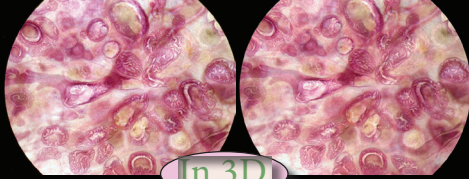
Fluid producing micropapillary breast cancer of ductal origin (DAB)



Spontaneous unilateral serous or bloody nipple discharge can be an alarming clinical symptom for the patient and also, it may cause considerable differential diagnostic problem for the radiologist. This volume of our 3D book series correlates the imaging findings (mammography / breast ultrasound / breast MRI) with large thin- and large thick section (subgross, 3D) histology in cases when the underlying cause of the discharge is fluid-producing breast cancer originating from the major ducts (DAB).



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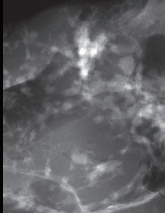
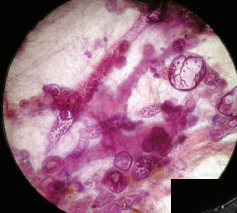


In 3D

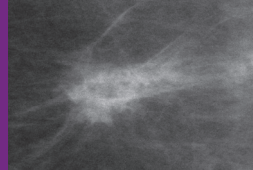
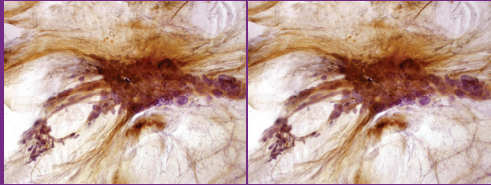
Breast cancer originating from the major ducts

## Ductal Adenocarcinoma of the Breast (DAB), Part 7

Architectural distortion on the mammogram without calcifications or nipple discharge

Mammographic-MRI-subgross (3D) histologic correlation of this extensive micropapillary cancer originating from the major ducts presenting as architectural distortion.

Architectural distortion on the mammogram without calcifications or nipple discharge

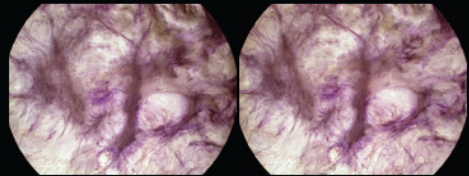
In 3D

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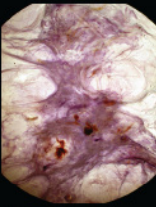
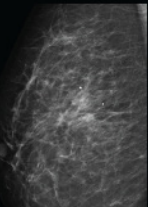
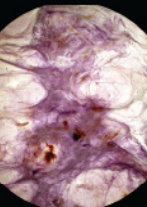
There are two main groups of diffuse breast cancers presenting on the mammogram as large regions of architectural distortion; these account for about 25% of all breast cancers and tend to have a poor outcome: 1) **Neoductogenesis**, i.e. "duct forming invasive carcinoma", the topic of this volume, often erroneously diagnosed as "DCIS", and 2) **Diffusely infiltrating breast cancer**, the topic of Vol. XI.

This volume demonstrates the DAB subgroup where the unnaturally high concentration of abnormal, tumor-filled ducts results in an **asymmetric density with architectural distortion on the mammogram** and often causes a palpable "thickening". Detecting architectural distortion on the mammogram and diagnosing the underlying disease correctly is a challenge for the radiologist. Breast cancers originating from the major ducts (DAB) are characterized by the formation of new, duct-like structures through the process of **Neoductogenesis**.

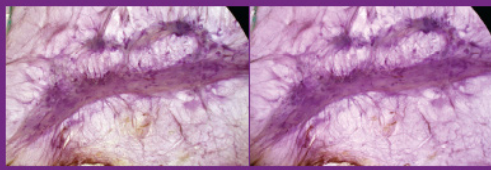
László Tabár, MD  
Tibor Tot, MD, Peter B. Dean, MD  
Olga Puchkova, MD



## Diffusely infiltrating breast cancer, Part 1


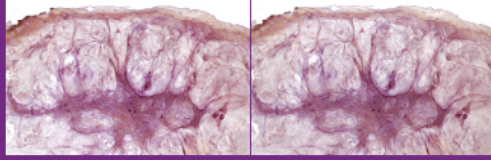
In 3D



Stereoscopic subgross (3D) image pair of a diffusely infiltrating breast cancer

ISBN 978-0-9888361-2-9  
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In 3D

Extensive diffusely infiltrating breast cancer: the dominant feature is the extreme amount of connective tissue with concave contours.

This volume describes a breast cancer subtype that is a substantial challenge for the entire breast cancer team. The clinical, imaging and outcome observations indicate that diffusely infiltrating breast cancer represents a very unusual breast malignancy, regardless of whether it is E-cadherin negative or positive. All aspects of the diffusely infiltrating breast cancer suggest that it may have a site of origin different from all other breast cancers. We propose that it originates from the mesenchymal stem cells/progenitors through a complex process of epithelial-mesenchymal transformation and predominantly mesenchymal-epithelial transformation. Control of this unusual malignancy requires new approaches to earlier detection and entirely new therapeutic innovations.



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