OS AVANÇOS DA PATOLOGIA NO BRASIL

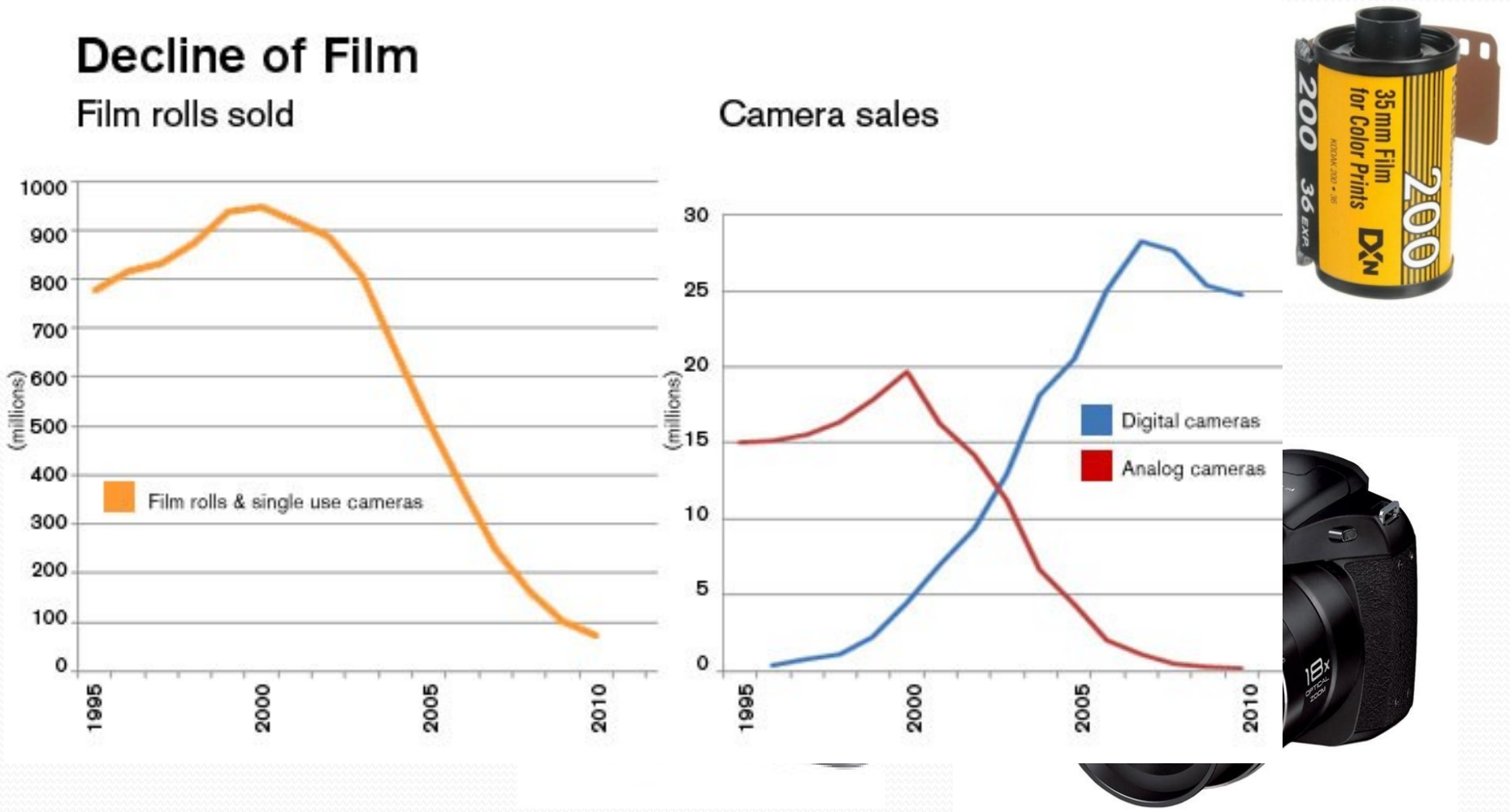
Clóvis Klock
Head Grupo Infolaudo/Medicina Diagnóstica
Presidente da SBP (2016-2019)
clovisklock@gmail.com


Mercedes
The World is changing


2-385-19


9:41
Tuesday, September 12

Inovação Sustentável/Disruptiva



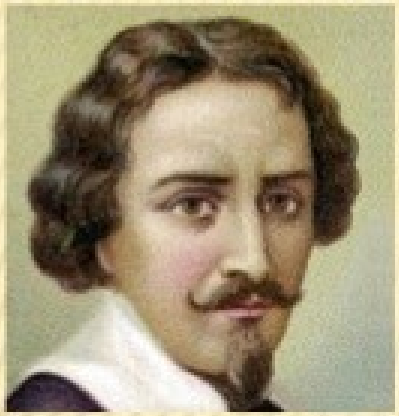
Inovação Disruptiva

SANTA CLAUS, YOU BASTARD !!!

DUE TO HARD ECONOMIC TIMES SANTA IS FORCED
TO SELL DEADLY CANCER STICKS.
SO AGAIN "SANTA CLAUS, YOU BASTARD. !!!"

CELL HISTORY

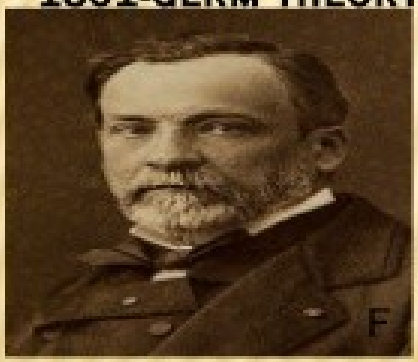
ZACHARIAS-JANSEN



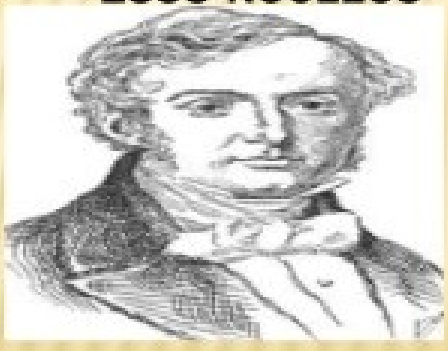
ANTON VON LEEUWENHOEK

1665-CELL
ROBERT HOOKE MICROGRAPHIA

LOUIS PASTEUR
1861-GERM THEORY

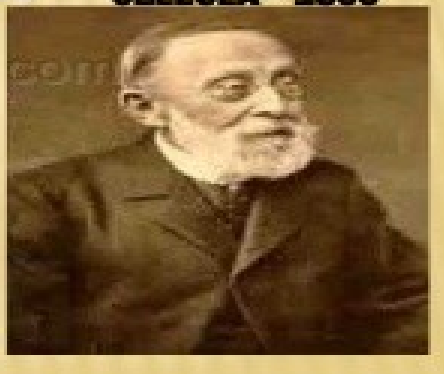


ROBERT BROWN
1833-NUCLEUS



THEODOR SCHWANN-
ANIMALS-CELLS-1838

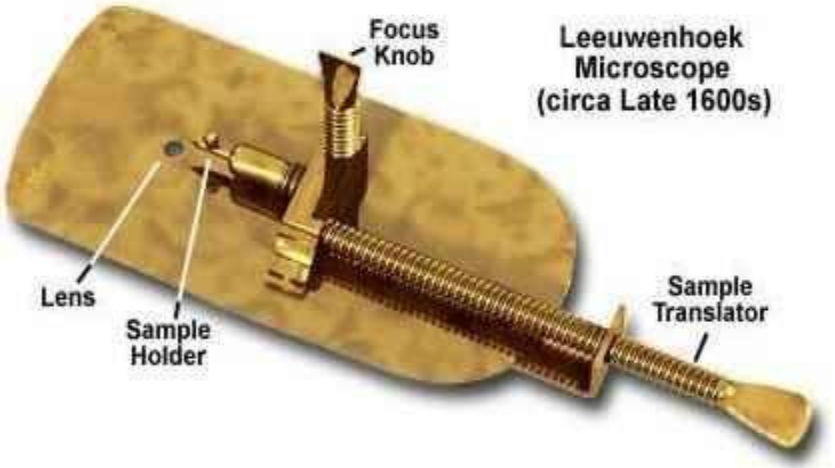
RUDOLF VIRCHOW
"OMNIS CELLULA E CELLULA" 1855

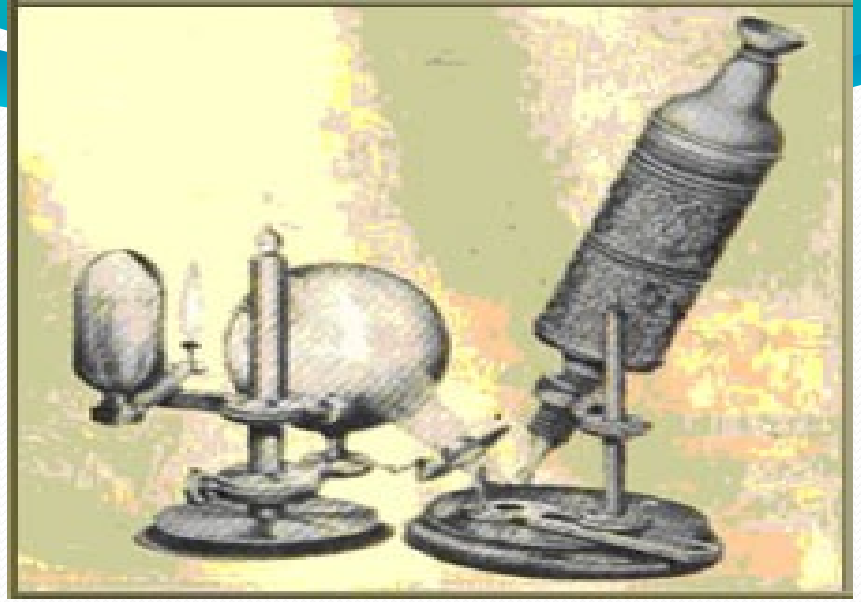


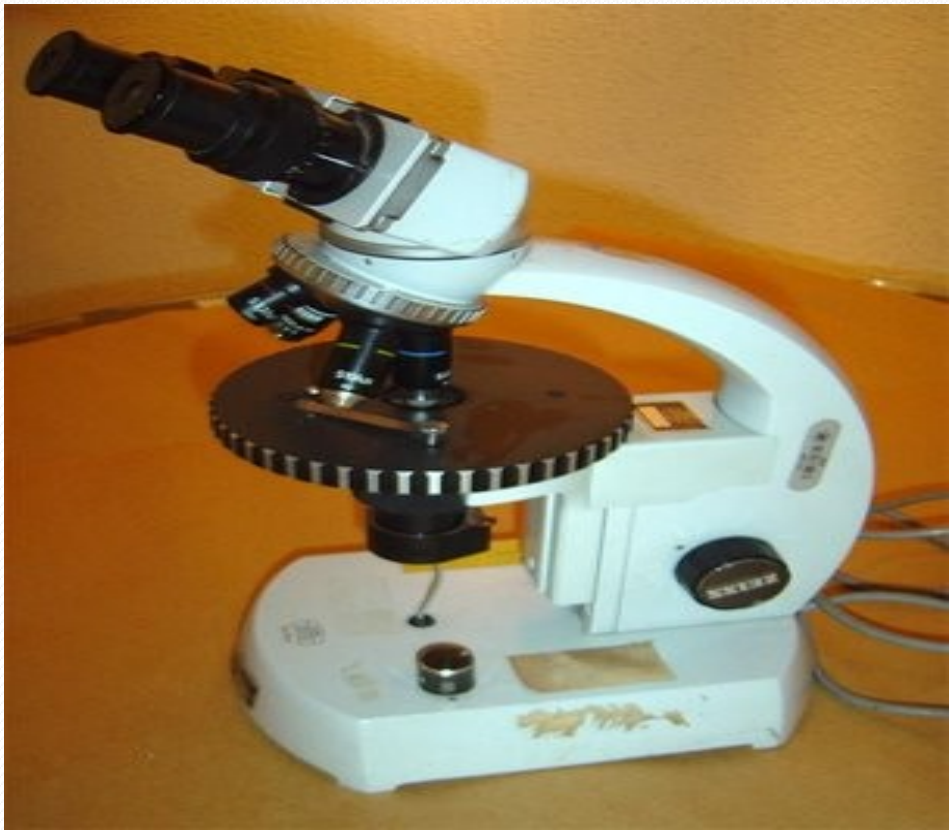
Miescher (1871) : DNA

watson and crick : double helix structure of dna

Singer & nicholson in (1972):Fluid Mosaic model


Focus Knob
Leeuwenhoek Microscope (circa Late 1600s)
Lens
Sample Holder
Sample Translator





LABORATÓRIOS NO BRASIL

- GRANDE QUANTIDADE DE LABORATÓRIOS DE QUALIDADE NO BRASIL
- GRANDES GRUPOS
- MAIOR QUANTIDADE DE LABORATÓRIOS DE PEQUENO E MÉDIO PORTE
- TODAS AS TÉCNICAS SÃO OFERECIDAS: IMUNO-HISTOQUÍMICA, PATOLOGIA MOLECULAR: RT-PCR, SEQUENCIAMENTO
- POUCAS TÉCNICAS QUE ALGUMAS FARMAS FAZEM: FUNDATION ONE

PATOLOGISTAS

- CFM: 3210 PATOLOGISTAS (VIES)
- RESIDENTES 269 DADOS DE 2018 – R1 120, R2 69, R3 77, R4 3
- VAGAS DE RM EM PATOLOGIA 463
- CONCENTRAÇÃO : SUDESTE, SUL, AUMENTANDO NO NORDESTE, CENTRO-OESTE E NORTE COM ALGUMAS CAPITAIS COM NUMERO SUFICIENTE
- MUITAS CIDADES SEM LABORATÓRIOS DE PATOLOGIA

RESIDÊNCIA MÉDICA

- GRANDE PARTE DEFASADA
- SEM NECRÓPSIA
- SEM IMUNO-HISTOQUÍMICA (TÉCNICA IMPLEMENTADA NOS USA NA DÉCADA DE 1980)
- PATOLOGIA MOLECULAR NÃO É REALIDADE NA QUASE TOTALIDADE
- GRANDE NÚMERO DE DESISTÊNCIAS

The American Journal of Dermatopathology 8(2): 168, 1986.

A Brief Historical Note on Staining by Hematoxylin and Eosin

D. Friday King, M.D., and Laura A.C. King, M.D.

Paraffin-embedded tissue sections are routinely stained with hematoxylin and eosin (H&E) nowadays. Only when clinical history, gross examination, or H&E study suggests it are other "special" stains employed to delineate better features poorly or not at all brought out by hematoxylin and eosin.

Staining is such an integral part of modern microscopy of tissue that it is difficult to think of being without it. The procedure did not become widespread, however, until Joseph von Gerlach popularized the use of carmine in 1858 (1). As so often happens in science, serendipity was at work. For years Gerlach had been experimenting with ammoniacal carmine. One evening, he inadvertently left a section of cerebellum in a very dilute solution. In the morning he found the cellular details to be well stained. He had previously experimented with carmine in too high a concentration (2).

Encouraged by Gerlach's success, microscopists began to experiment with a wide range of natural substances, as well as with newly introduced synthetic aniline dyes. Hematoxylin, the only natural dye still in widespread use, is purified logwood extract. The logwood tree (*Haematoxylon campechianum*), which produces a heavy, red wood of fine texture, is native to Central America and the West Indies. For many years, it was the major cash crop of the Campeche region of Mexico because logwood was used extensively in industry and for coloring wine before the development of synthetic materials (3). Although Quekett (4) had briefly mentioned staining animal tissues with logwood dye, Waldeyer (5) was the first to investigate it for this purpose. Employing a plain aqueous extract, he tried to stain the axis cylinders of neurons, but with little success. Later, in 1865, Bohmer (6) did succeed in staining tissues with hematoxylin by combining it with alum as a mordant. Alum had already been widely used in the dye industry as a mordant, which Waldeyer had overlooked. Hematoxylin is a glucoside produced by treating an aqueous extract of logwood with ether. When it is oxidized, hematein, the true dye, results.

Eosin, the potassium salt of tetrabromofluorescein, was synthesized by Baeyer (7) and his coworkers in 1871. The name itself is derived from a Greek word meaning "morning red" (8). In 1876 Dreschfeld (9) and Fischer (10) described its usefulness as a tissue stain. A few months later, Busch (11) reported "on the double staining of the ossification border with eosin and hematoxylin." Over a century later, these still remain the most commonly used materials for tissue staining. □

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REFERENCES

1. Gerlach, J. von: *Mikroskopische Studien aus dem Gebiet der menschlichen Morphologie*. Erlangen, 1858, 72 pp.
2. Conn, H.J.: *The History of Staining*, 2 ed. Geneva, NY: Biotech Publications, 1948, p. 29.
3. Norman J.: *Terry's Guide to Mexico*. Garden City, NY: Doubleday, 1972, pp. 782–783.
4. Quekett, J.: *A Practical Treatise on the Use of the Microscope, Including the Different Methods of Preparing and Examining Animal, Vegetable and Mineral Structures*. London: Bailliere, 1848.
5. Waldeyer, W.: Untersuchungen uber den Ursprung und den Verlauf des Axencylinders bei Wirbellosen und Wirbelthieren sowie uber dessen Endverhalten in der quergestreiften Muskelfaser. *Henle u Pfeufer Z Ration Med 1863;20:193–256*.
6. Bohmer, F.: Zur pathologischen Anatomie der Meningitis cerebromedullaris epidemica. *Aerztl Intelligenzb Munchen 1865;12:539–550*.
7. Baeyer, A.: Zur geschichte des Eosins. *Berichte der Deutschen Chemischen Gesellschaft 1875;8:146–148*.
8. Hofmann, A.W. Ueber das Eosin. *Berichte der Deutschen Chemischen Gesellschaft 1875;8:62–66*.
9. Dreschfeld, J.: Ueber eine neue Tinctionsflüssigkeit für histologische Zwecke. *Centralblatt F. medizinischen Wissenschaften 1876;40:705–706*.
10. Fischer, E.: Eosin als Tinctionsmittel für mikroskopische Präparte. *Arch Mikrosk Anat 1876;12:349–352*.
11. Busch, H.: Ueber die Doppelfärbung des Ossificationsrandes mit Eosin and Haematoxylin. *Arch Physiol 1878;594–595*.

Ele não trabalha em consultório, mas você pode marcar uma consulta com ele.

Ele está lá, nos "bastidores" da medicina.

Agora você já sabe quem é o responsável pelo laudo do seu exame: o médico patologista.

Você pode não conhecê-lo, mas ele está nos laboratórios e diagnostica o seu problema de saúde.

Este é um ato médico complexo e cuidadoso, cujo resultado auxilia seu médico, a indicar a melhor maneira de tratar o seu problema.

SBP
Sociedade Brasileira de Patologia

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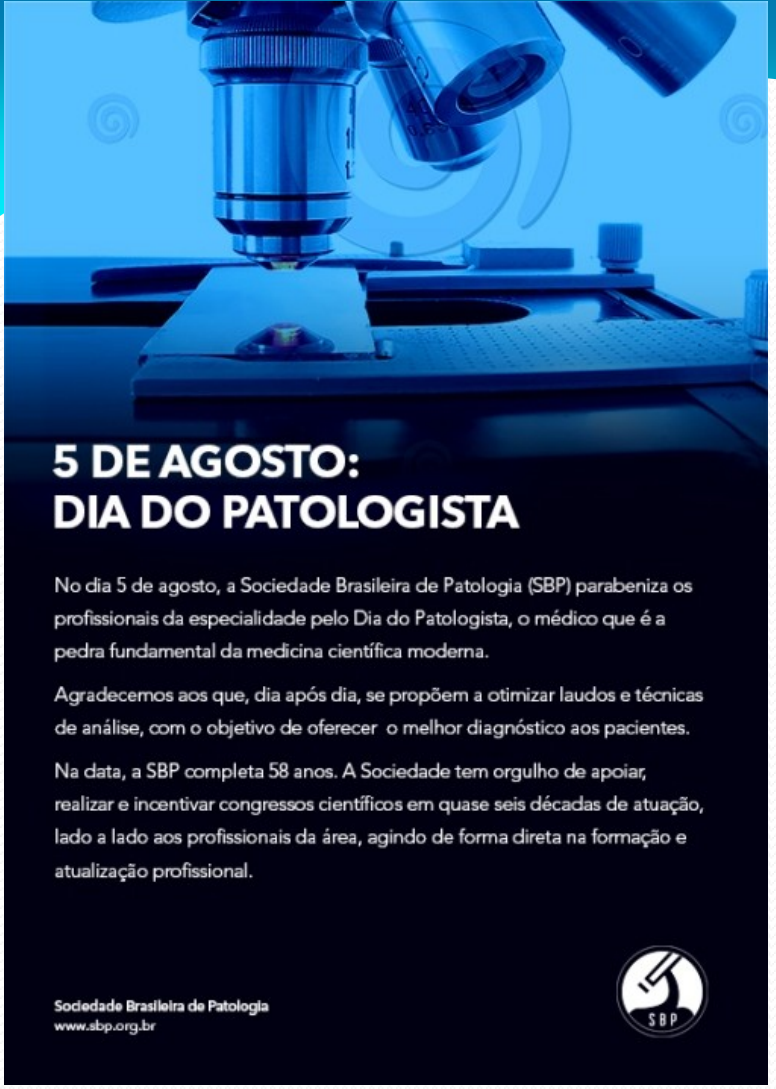
Médico Patologista

Você já ouviu falar?



5 DE AGOSTO: DIA DO PATOLOGISTA

No dia 5 de agosto, a Sociedade Brasileira de Patologia (SBP) parabeniza os profissionais da especialidade pelo Dia do Patologista, o médico que é a pedra fundamental da medicina científica moderna.

Agradecemos aos que, dia após dia, se propõem a otimizar laudos e técnicas de análise, com o objetivo de oferecer o melhor diagnóstico aos pacientes.

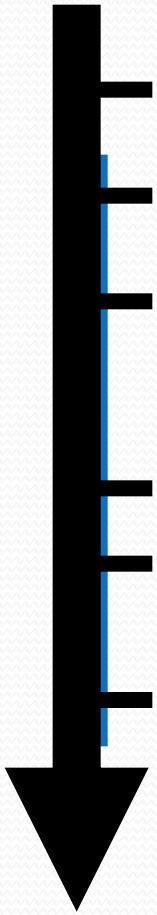
Na data, a SBP completa 58 anos. A Sociedade tem orgulho de apoiar, realizar e incentivar congressos científicos em quase seis décadas de atuação, lado a lado aos profissionais da área, agindo de forma direta na formação e atualização profissional.

Sociedade Brasileira de Patologia
www.sbp.org.br

PACQ - SBP

- Programa de Acreditação
- O Programa de Acreditação está baseado em **requisitos críticos (RC)** e **requisitos importantes (RI)**, que buscam verificar o cumprimento de um rol de processos e procedimentos imprescindíveis à segurança dos pacientes e dos colaboradores.
- Serão verificados a Compliance, a rastreabilidade das amostras, adequação de instalações, manutenção de equipamentos e procedimentos internos de segurança, o sistema da qualidade do laboratório como um todo, incluindo os requisitos de gestões da qualidade, procedimentos e processos laboratoriais, recursos humanos e gestão administrativa.
- Entende-se que uma instituição só poderá prover **exames de qualidade** e com **segurança** se estiver em pleno funcionamento, dentro dos **parâmetros técnicos, legislativos**e com **saúde financeira** para patrocinar todos os requerimentos necessários para sua sustentabilidade.
- É imperativo que a instituição tenha incentivo a buscar a**melhoria contínua da qualidade**, como um caminho de sentido único e sem volta.

O Desenvolvimento da Patologia



Sec XIV-XIX

Sec XX

1930/50

1960

1980

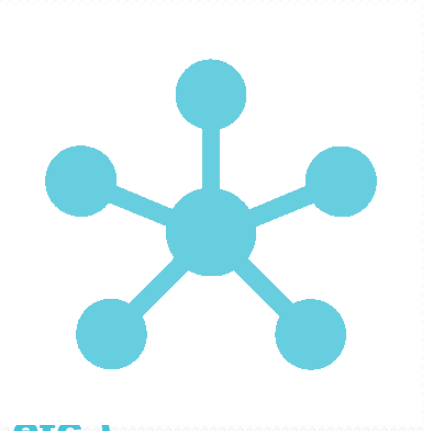
2000

- Patologia Anatômica
- Patologia Celular
- Patologia Ultraestrutural
- Patologia dos Marcadores
  - Imunofluorescência
  - Imunoistoquímica
- Patologia Molecular

A mudança do foco do objeto

O QUE O CLINICO/CIRURGIÃO ESPERA DO PATOLOGISTA

- Tamanho e extensão local do tumor
- Situação das margens de ressecção
- Tipo histológico
- Grau de malignidade
- Embolização vascular: venosa e linfática
- Infiltração de filetes nervosos
- Expressão imuno-histoquímica (Ex: ER, RP, p53, etc.)
- PERFIL IMUNO-HISTOQUÍMICO (CD20, CD3, CD30, CD246, PD-L1, ROS1, ALK, ETC)
- PATOLOGIA MOLECULAR (EGFR, HER-2 BRAF)
- PESQUISA DE VIRUS (HPV, CLAMIDIA)
- PERFIL MOLECULAR - SEQUENCIAMENTO

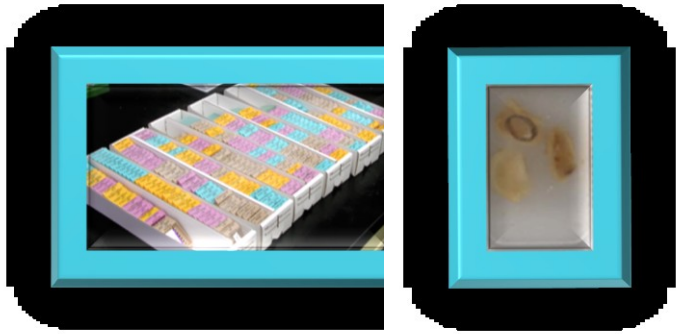


Com a utilização de sofisticadas técnicas, a patologia deixou de ser um método apenas artesanal e tornou-se uma especialidade cada vez mais essencial para diagnósticos e tratamentos eficazes

DESAFIO
DO PATOLOGISTA

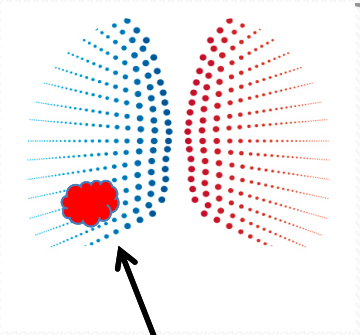
MENOS
MATERIAL

MAIS
INFORMAÇÕES
PARA TESTES



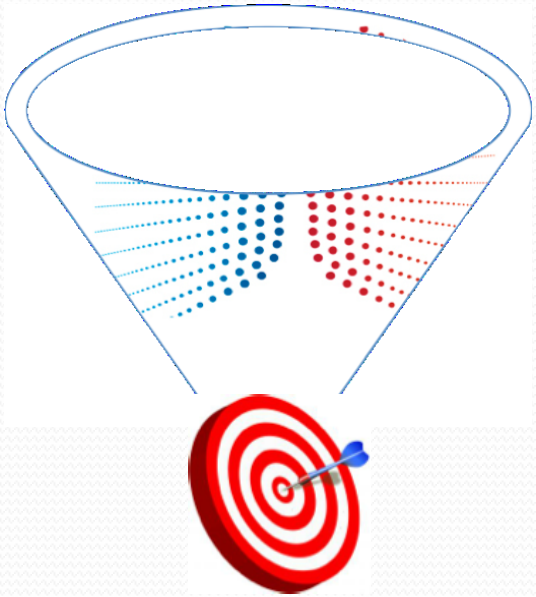
Material bem caracterizado e preservado

O BLOCO DE PARAFINA VALE OURO!!!



Biópsia

Formol tamponado 10%



A Review of Preanalytical Factors Affecting Molecular, Protein, and Morphological Analysis of Formalin-Fixed, Paraffin-Embedded (FFPE) Tissue

How Well Do You Know Your FFPE Specimen?

B. Paige Bass, PhD; Kelly B. Engel, PhD; Sarah R. Greytak, PhD; Helen M. Moore, PhD

• ***Context.***—**Formalin fixation and paraffin embedding is a timeless, cost-efficient, and widely adopted method of preserving human tissue biospecimens that has resulted in a substantial reservoir of formalin-fixed, paraffin-embedded blocks that represent both the pathology and preanalytical handling of the biospecimen. This reservoir of specimens is increasingly being used for DNA, RNA, and proteomic analyses.**

Objective.—**To evaluate the impact of preanalytical factors associated with the formalin fixation and paraffin embedding process on downstream morphological and molecular endpoints.**

Data Sources.—**We surveyed the existing literature using the National Cancer Institute's Biospecimen Research Database for published reports investigating the potential influence of preanalytical factors associated with the formalin fixation and paraffin embedding process on DNA, RNA, protein, and morphological endpoints.**

Conclusions.—**Based on the literature evidence, the molecular, proteomic, and morphological endpoints can be altered in formalin-fixed, paraffin-embedded specimens by suboptimal processing conditions. While the direction and magnitude of effects associated with a given preanalytical factor were dependent on the analyte (DNA, RNA, protein, and morphology) and analytical platform, acceptable conditions are highlighted, and a summary of conditions that could preclude analysis is provided.**

(*Arch Pathol Lab Med.* 2014;138:1520–1530; doi: 10.5858/arpa.2013-0691-RA)

Formalin fixation and paraffin embedding are part of a globally applied method of tissue preservation; however, they also represent a multistage process that is far from standardized. A recent review article[1] published by our office identified 15 preanalytical factors associated with formalin fixation and paraffin embedding tissue processing that have documented effects on immunohistochemistry (IHC) efficacy and many more that were unaddressed or underaddressed in the scientific literature. While technological advancements afford the molecular analysis of formalin-fixed, paraffin-embedded (FFPE) biospecimens, efforts have achieved varying levels of success, which may be a result of differences in FFPE processing regimens or extraction techniques. In the present review, we summarize reported effects of FFPE processing factors on molecular and morphological endpoints, explore differences between analytes, and underscore evidence-based and analyte-specific recommendations for specific preanalytical factors when possible. It is our aim that this review will serve as a resource both for the evaluation of archival FFPE specimens and as a guideline for the collection of new FFPE specimens. Although additional sources of preanalytical variability, including extraction methods, antigen retrieval techniques, and patient-related factors, may be capable of influencing analytical endpoints, the scope of the present review was limited to evidence available for FFPE fixation and processing factors.

Also see p. 1426.

Accepted for publication January 8, 2014.

From the Kelly Government Solutions Program, Kelly Services, Rockville (Drs Bass and Greytak), and the Biorepositories and Biospecimen Research Branch, Cancer Diagnosis Program, Division of Cancer Treatment and Diagnosis, National Cancer Institute, Bethesda (Dr Moore), Maryland; and the Preferred Solutions Group, Arlington, Virginia (Dr Engel).

The authors have no relevant financial interest in the products or companies described in this article.

Reprints: Helen M. Moore, PhD, Biorepositories and Biospecimen Research Branch, Cancer Diagnosis Program, Division of Cancer Treatment and Diagnosis, National Cancer Institute, 9609 Medical Center Dr, Room 3W422, Mail Stop Code 9728, Bethesda, MD 20892 (e-mail: moorehe@mail.nih.gov).

MATERIALS AND METHODS

Potential sources of preanalytical variability associated with the procurement, fixation, processing, and storage of human FFPE tissue biospecimens were identified based on the experience of the authors, data contributed to the Biospecimen Research Network (http://biospecimens.cancer.gov/researchnetwork), and literature evidence and are summarized in Table 1. Targeted surveys were conducted for each preanalytical factor. Relevant peer-reviewed, primary research articles that used human FFPE tissue biospeci-

Table 2. Acceptable Thresholds for Preanalytical Factors Based on Literature Evidence for Specific Analytes

Preanalytical Factor	DNA	RNA	Protein	Morphology
Postmortem interval	<48 h for FISH,[7] ≤4 d for PCR[6]	<4 h[53]	Evidence was insufficient	Evidence was not available
Cold ischemia	<1 h for FISH,[5] ≤24 h for PCR[11]	<12 h[56]	<12 h[5,80–83]	<6 h[91,139–141]
Warm ischemia time	Evidence was insufficient	Evidence was not available	Evidence was not available	Evidence was not available
Specimen size	3–10 mm^3 (Ref. 10)	Evidence was not available	1.2–3.5 mm^3 (Ref. 84)	Evidence was not available
Prefixation handling	Evidence was not available	Evidence was not available	Thresholds are antigen specific[85–87]	Thresholds are tissue and method specific[81,85,142,143]
Decalcification	EDTA[11–14]	Ultrasound or EDTA[14,57–59]	Thresholds are tissue and antigen specific[87–89]	Ultrasound; EDTA; nitric, formic, or acetic acid; DECAL[b]; Cal-Ex[c]; D-calcifier[d]; Plank-Rychlo, Ebner's, or Jenkin's solution[14,89,144,145]
Tissue to fixative ratio	Evidence was not available	Evidence was not available	1:1 to 1:20 ratio[90]	Evidence was not available
Fixative buffer	NBF[10,16–23]	NBF[60]	NBF[86,87,90,93]	Evidence was not available
Fixative delivery method	Immersion, microwave-accelerated,[36–38] or ultrasound-accelerated[39,40]	Immersion, microwave-accelerated,[38] or ultrasound-accelerated[39,40,61]	Immersion,[36,37,40,111] perfusion,[37,108] injection,[107] heat-accelerated,[109] microwave-accelerated,[17,110] or ultrasound-accelerated[39,61]	Immersion,[40,110,111,151] perfusion,[37,108,151,152] microwave-accelerated,[110,111,147] or ultrasound-accelerated[39,40,61]
Fixative concentration	Evidence was not available	Evidence was not available	10% or 15% NBF[91,92]	4% formaldehyde for immersion fixation,[113] 0.5%–1% NBF for microwave-accelerated fixation[147]
Fixation duration[a]	<72 h[6,7,14,18,21,24–30]	8–48 h[57,60–66]	6–24 h[61,86,87,90,91,95–104]	<1 y[31,100,148,149]
Fixation temperature	4°C or ambient[22,25,34,35]	4°C or ambient[25,35,70,71]	4°C or ambient[93,105,106]	Evidence was not available
Dehydration reagent and conditions	Evidence was not available	Evidence was not available	5–10 h At 37–45°C,[90,112,115] 10 h at −20°C,[93] or 10–11 h at 4°C[93,114]	Evidence was insufficient
Clearing reagent and conditions	Evidence was not available	Evidence was not available	30 min to 4 h at 45°C[90] or 4°C[114]	Evidence was insufficient
Paraffin embedding reagent and conditions	Pure paraffin[19]	Evidence was not available	Evidence was insufficient	Evidence was insufficient
Duration of paraffin block storage	≤5 y[3,43,44]	≤1 y[41,59,60,73–78]	≤25 y for IHC,[117–122,124] <10 y for platforms requiring protein extraction[84,103,104,121,126]	Evidence was insufficient
FFPE block size or section thickness	Whole sections preferable to cores[10,52] or isolated nuclei[7]	Evidence was not available	2–4 μm[113]	2–3 μm[160]
Type of slide or adhesive	Evidence was not available	Evidence was not available	Evidence was insufficient	Evidence was insufficient
Slide drying duration and temperature	Evidence was not available	Evidence was not available	24 h at ambient,[93] overnight at 37°C,[90] 16–24 h at 58–68°C[131]	Evidence was not available
Tissue section storage	Insufficient evidence	<3 mo at ambient[79]	<1 wk[118,130,132,135,137]	Evidence was not available

Abbreviations: EDTA, ethylenediaminetetraacetic acid; FFPE, formalin-fixed, paraffin-embedded; FISH, fluorescence in situ hybridization; IHC, immunohistochemistry; NBF, neutral buffered formalin; PCR, polymerase chain reaction.

[a] Acceptable thresholds for fixation duration were based on biospecimens that were fixed in 10% NBF via immersion at ambient temperature.
[b] DECAL (Decal Chemical Corp, Pomona, New York).
[c] Cal-Ex (Fisher Scientific Co, Fair Lawn, New Jersey).
[d] D-calcifier (Lerner Laboratories, Pittsburg, Pennsylvania).

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Clearing reagent and conditions	Evidence was not available	Evidence was not available	30 min to 4 h at 45°C[90] or 4°C[114]	Evidence was insufficient
Paraffin embedding reagent and conditions	Pure paraffin[19]	Evidence was not available	Evidence was insufficient	Evidence was insufficient
Duration of paraffin block storage	≤5 y[3,43,44]	≤1 y[41,59,60,73–78]	≤25 y for IHC,[117–122,124] <10 y for platforms requiring protein extraction[84,103,104,121,126]	Evidence was insufficient
FFPE block size or section thickness	Whole sections preferable to cores[10,52] or isolated nuclei[7]	Evidence was not available	2–4 μm[113]	2–3 μm[160]
Type of slide or adhesive	Evidence was not available	Evidence was not available	Evidence was insufficient	Evidence was insufficient
Slide drying duration and temperature	Evidence was not available	Evidence was not available	24 h at ambient,[93] overnight at 37°C,[90] 16–24 h at 58–68°C[131]	Evidence was not available
Tissue section storage	Insufficient evidence	<3 mo at ambient[79]	<1 wk[118,130,132,135,137]	Evidence was not available

Abbreviations: EDTA, ethylenediaminetetraacetic acid; FFPE, formalin-fixed, paraffin-embedded; FISH, fluorescence in situ hybridization; IHC, immunohistochemistry; NBF, neutral buffered formalin; PCR, polymerase chain reaction.

[a] Acceptable thresholds for fixation duration were based on biospecimens that were fixed in 10% NBF via immersion at ambient temperature.
[b] DECAL (Decal Chemical Corp, Pomona, New York).
[c] Cal-Ex (Fisher Scientific Co, Fair Lawn, New Jersey).
[d] D-calcifier (Lerner Laboratories, Pittsburg, Pennsylvania).


HistoPot


Serosep

FORMALINA

TAMPONADA 10%

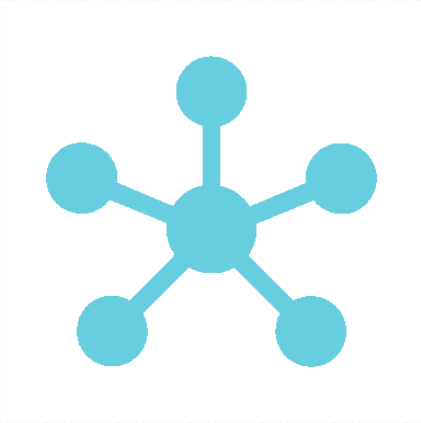
- Formalina neutra tamponada 10% (pH: 6,8-7,4):
- Formaldeído comercial.....100mL
- Água destilada.....900mL
- Fosfato de sódio monobásico.....4g
- Fosfato de sódio dibásico 6,5g

- Referência: Caputo, L.F.G., Gitirana, L.B., Manso, P.P.A. Conceitos e métodos para a formação de profissionais em laboratórios de saúde. Capítulo 3: Técnicas histológicas. Manual da Fiocruz, volume2. 2005

FIXAÇÃO

EFEITOS SOBRE O TECIDO

- – Endurecimento.
- – Solidificação.
- – Diferenciação óptica.
- – Efeitos de coloração.
- – Perda discreta da amostra.
- – Retração da amostra.

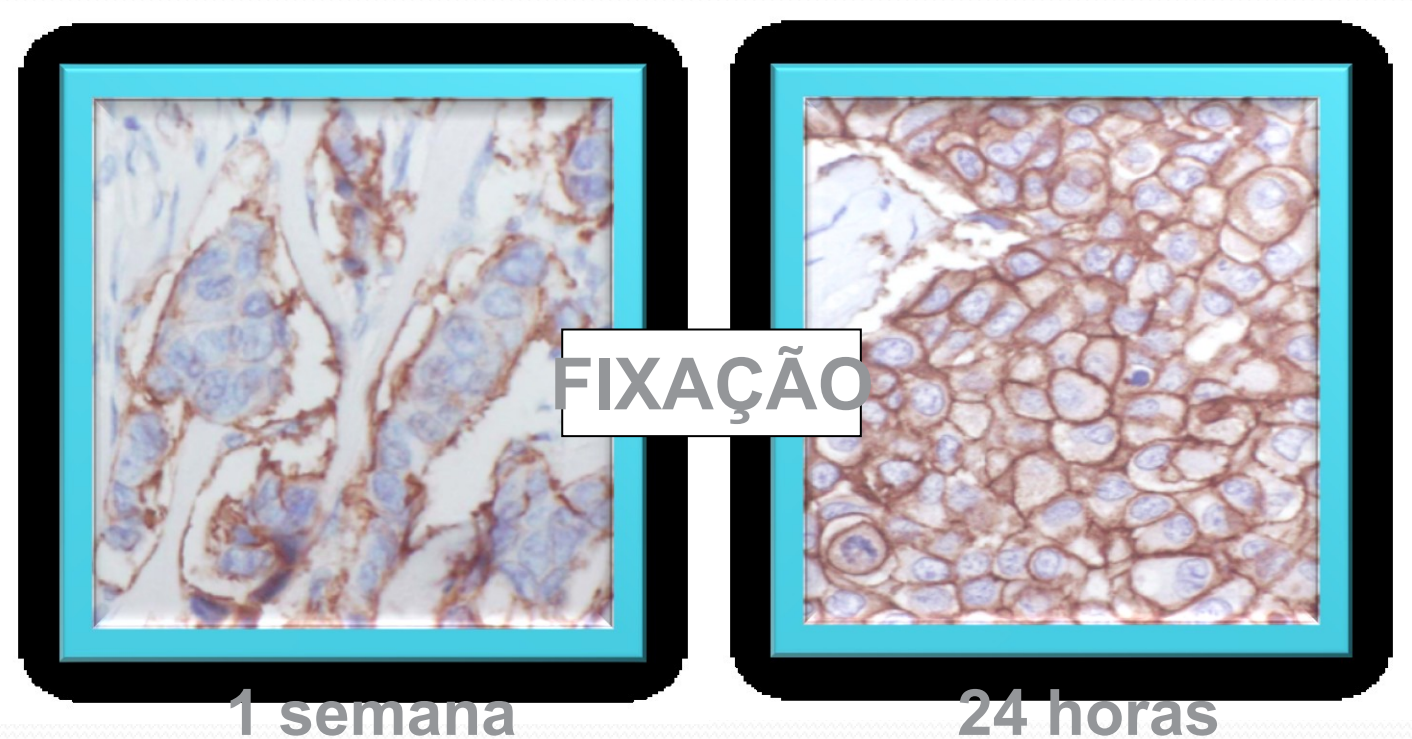


FIXAÇÃO

O QUE PODE AFETAR

- Temperatura.
- pH.
- Volume.
- Tempo.
- Pressão.
- Superfície.
- Concentração.
- Vasos capilares e fibras musculares

Qual a diferença entre as duas IHQ?

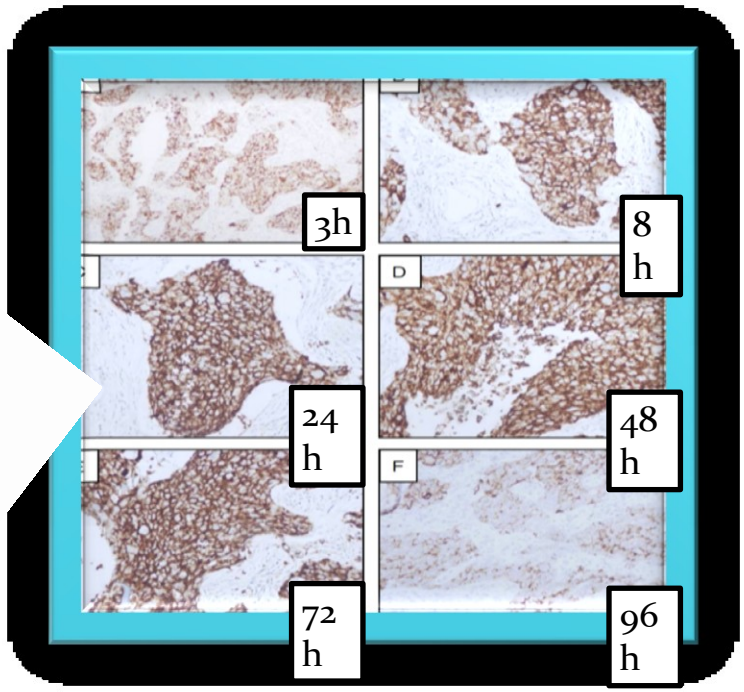


Virchows Arch
DOI 10.1007/s00428-016-1910-4

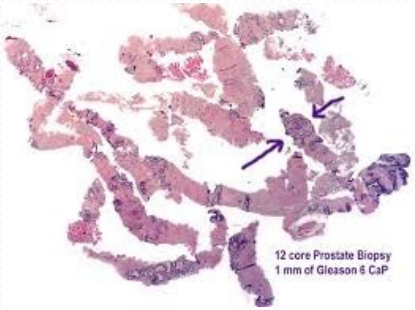
REVIEW AND PERSPECTIVES

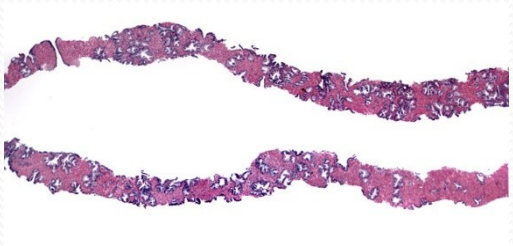
Assessment of the PD-L1 status by immunohistochemistry: challenges and perspectives for therapeutic strategies in lung cancer patients

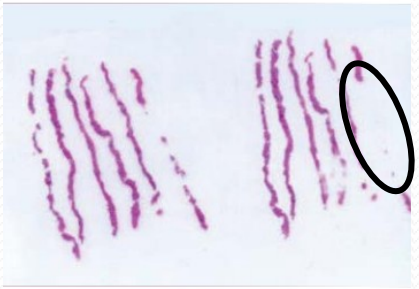
Marius Ilie[1,2,3,4] · Véronique Hofman[1,2,3,4] · Manfred Dietel[5,6] · Jean-Charles Soria[7] · Paul Hofman[1,2,3,4]

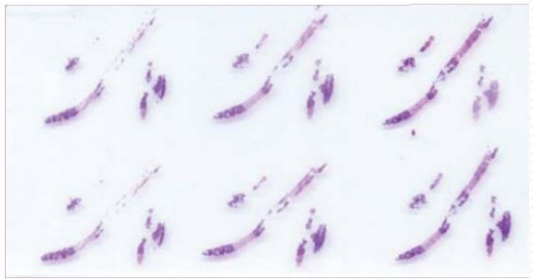


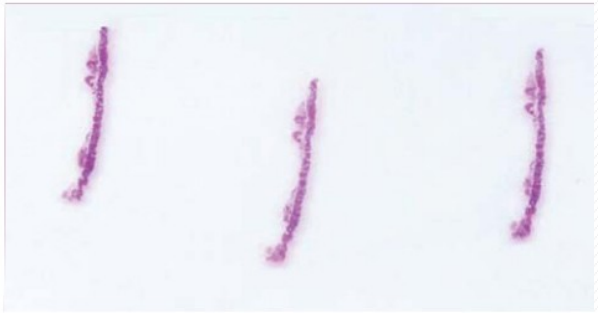
Cuidados pré-analíticos





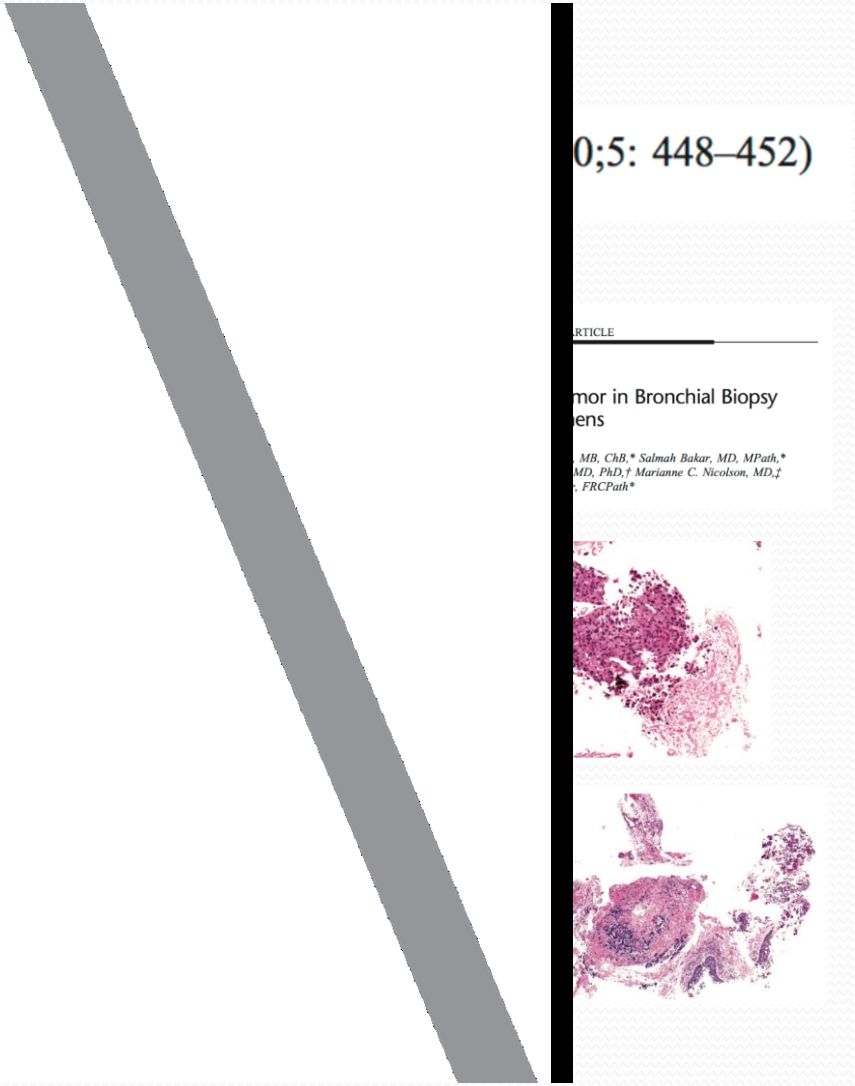




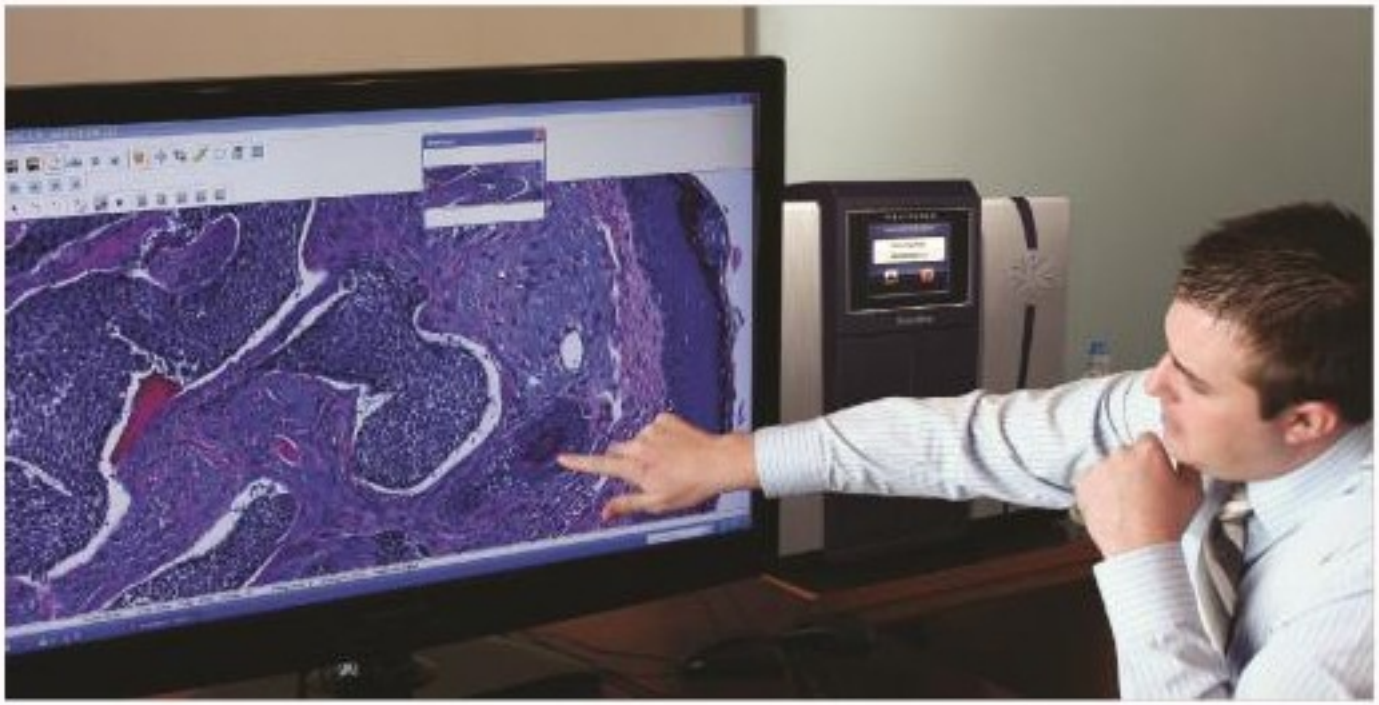


3 a 9

- **100 consecutive biopsies**
- . 3.4 fragments per case
- . 48% of cases had tumor in all
- . Median of 33,4% of the fragme tumor



Cleveland Clinic



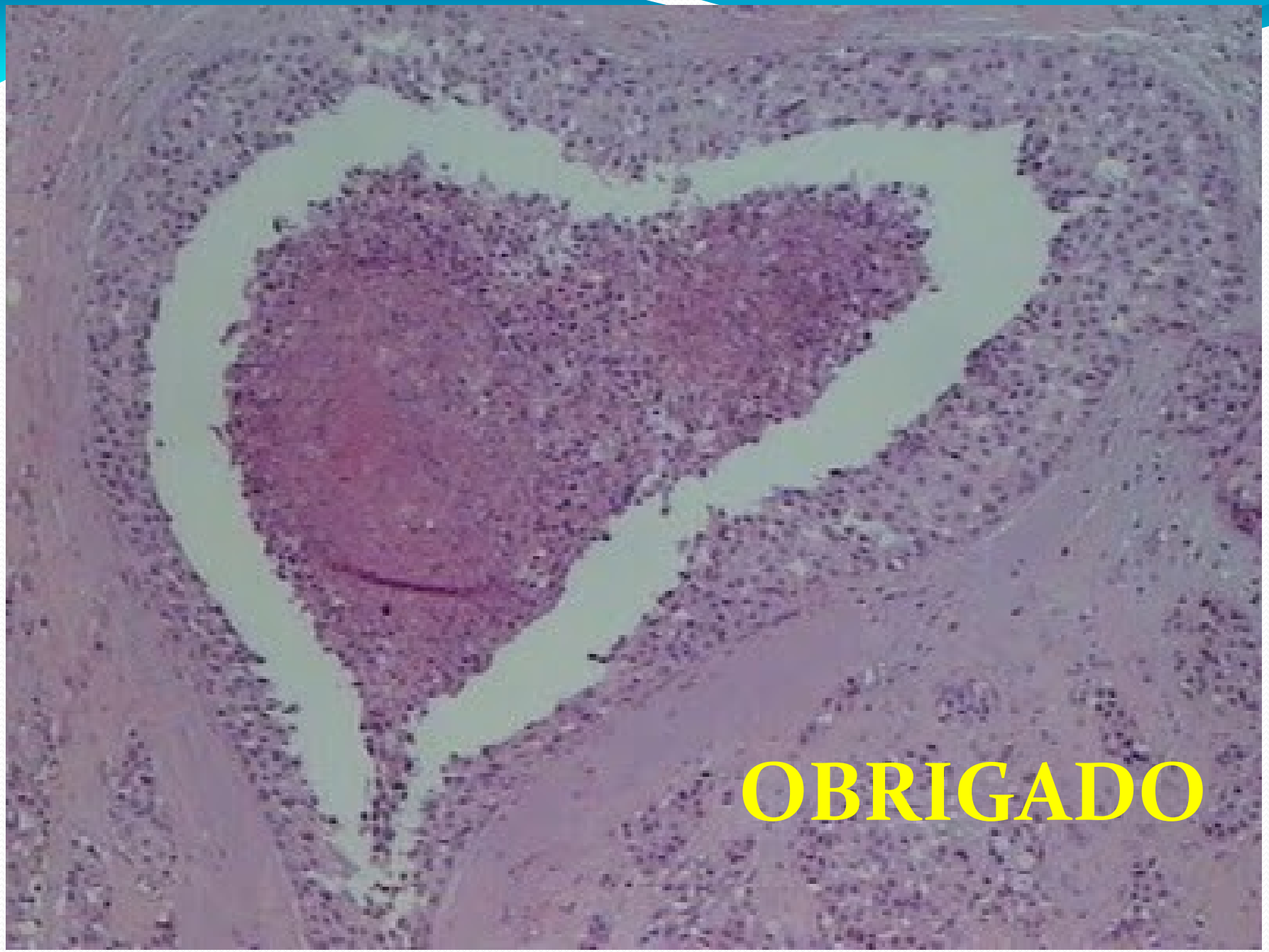

PHILIPS

Patologia Molecular

- Imuno-histoquímica
- Hibridação *in situ*
- FISH

- cDNA microarray
- Blots
- PCRs
- Sequenciamentos

Ogata & Klock
Infolaudo
Medicina de Precisão


OBRIGADO