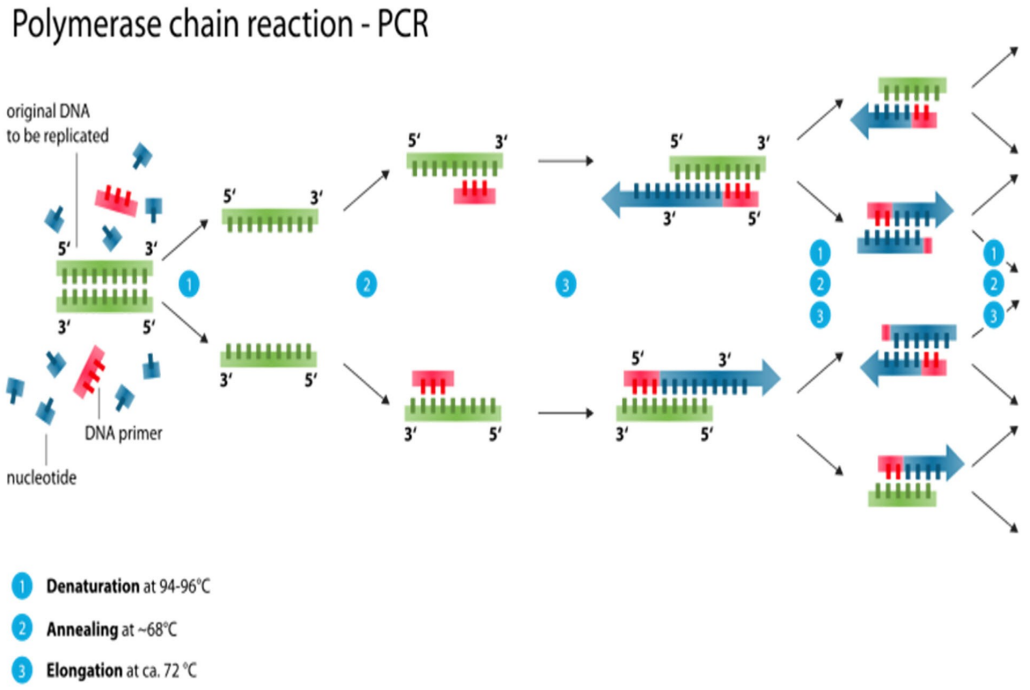
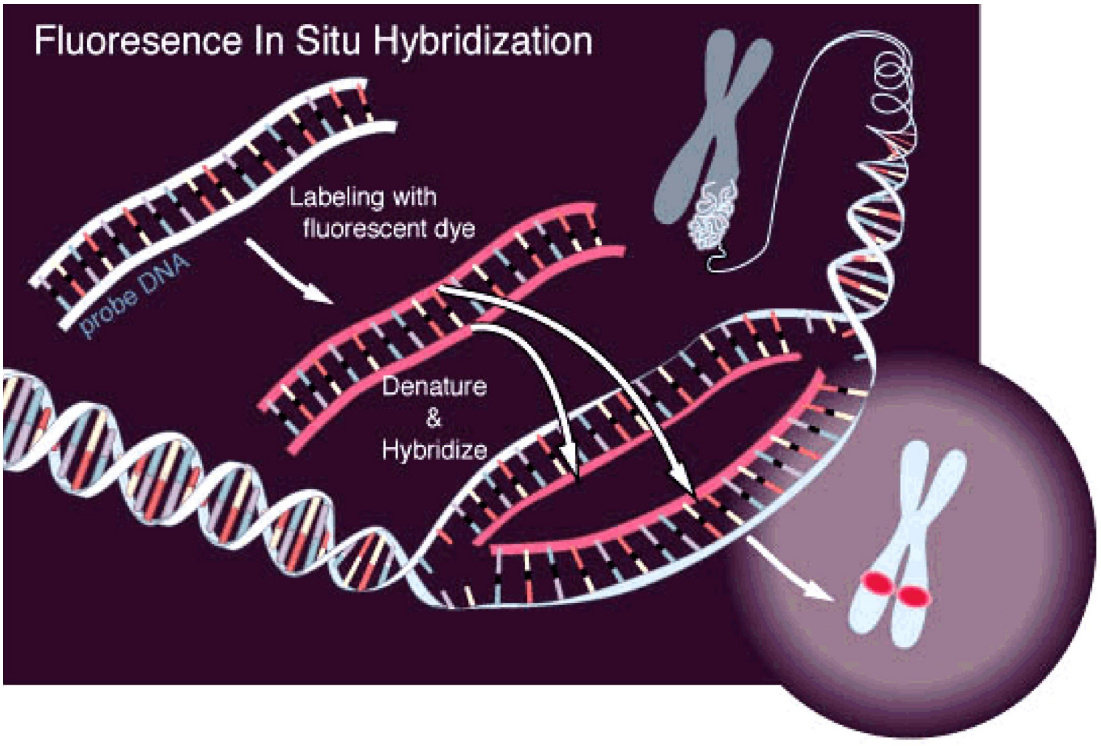
Section

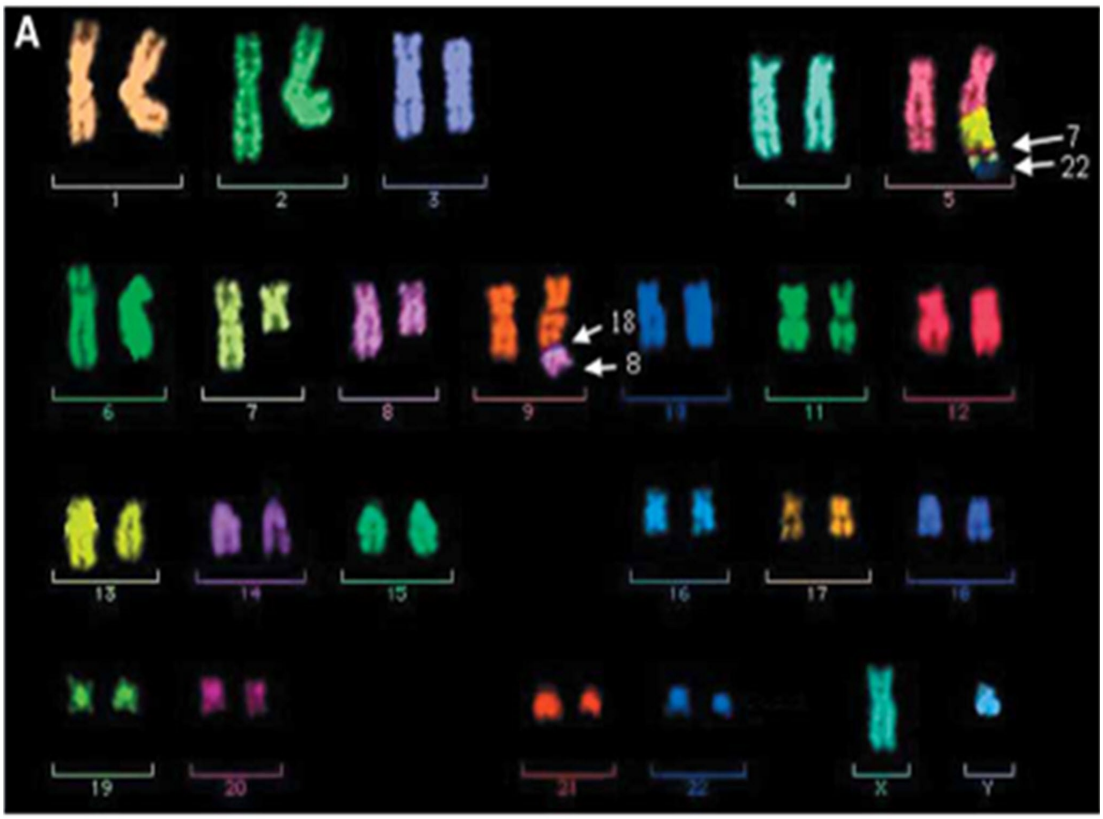
12 Special Techniques in Pathology



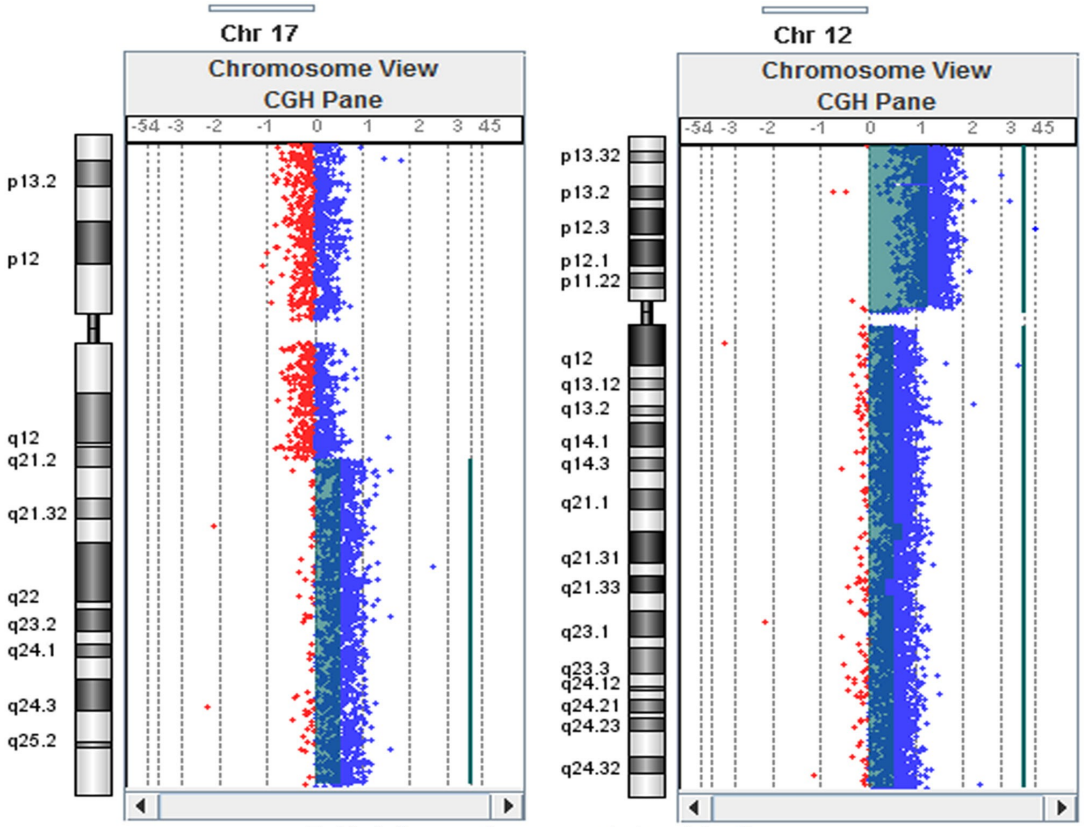
P 16-1 PCR



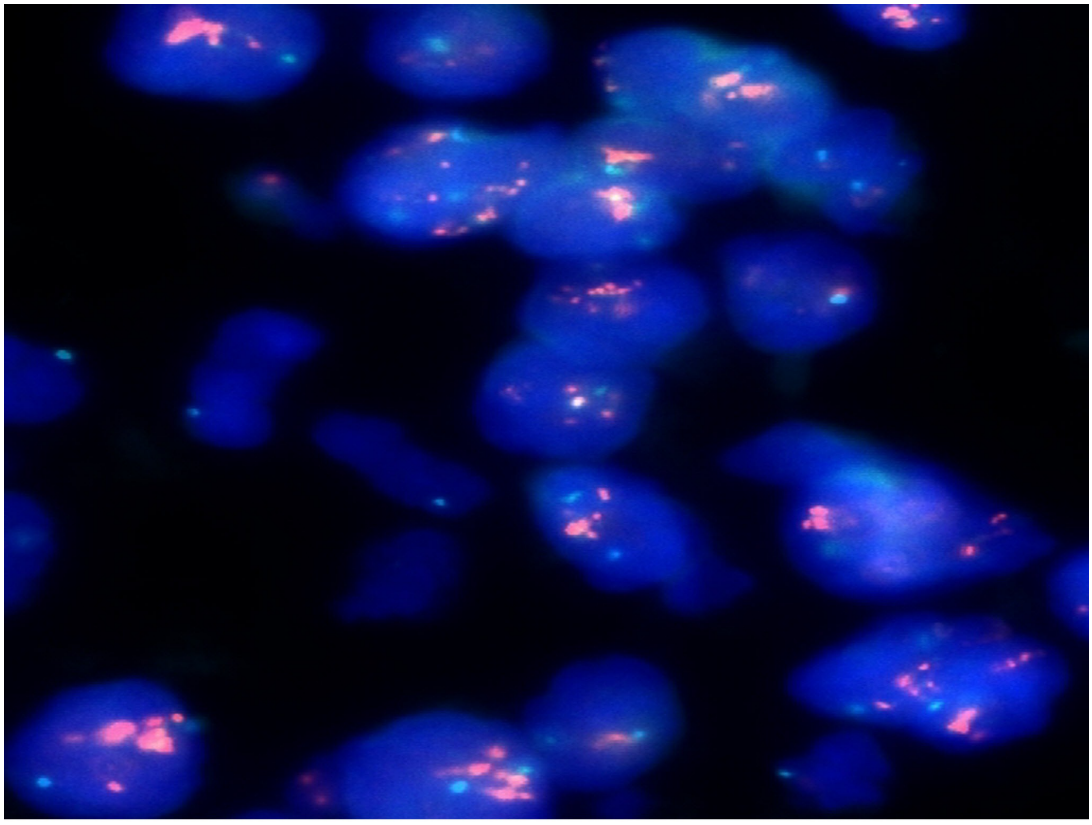
P 16-2 DNA probe



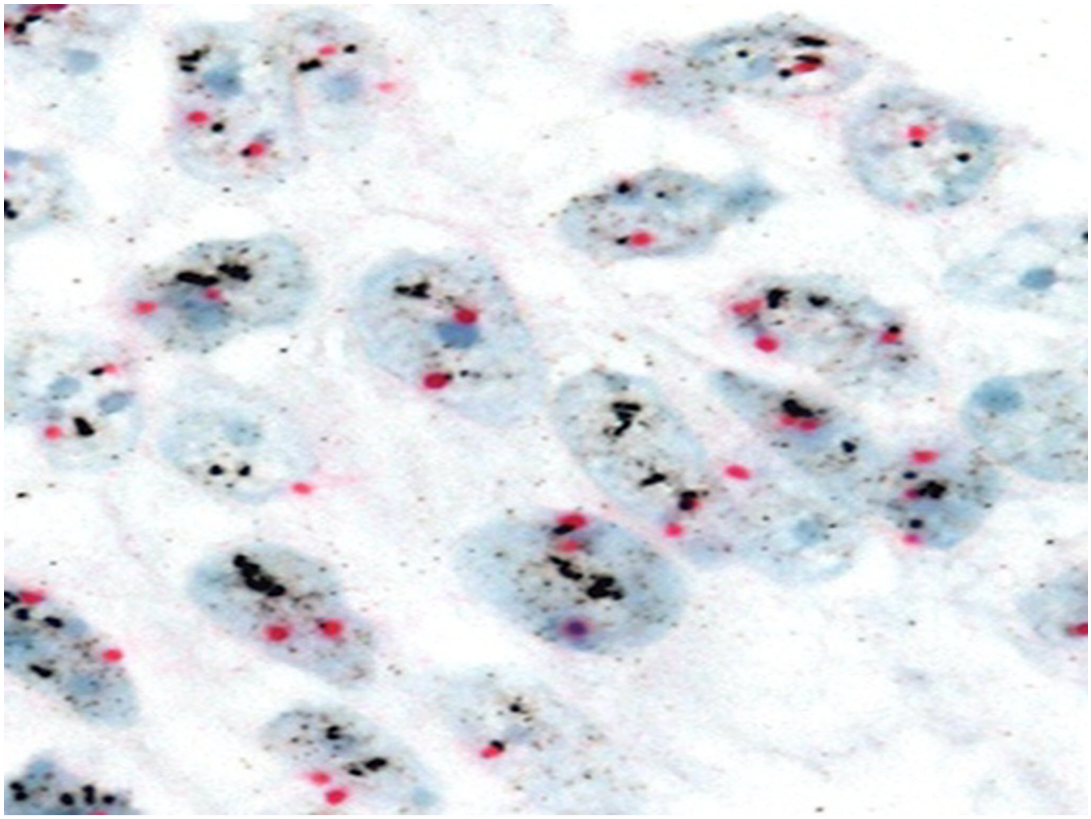
P 16-3 Multicolor karyotyping



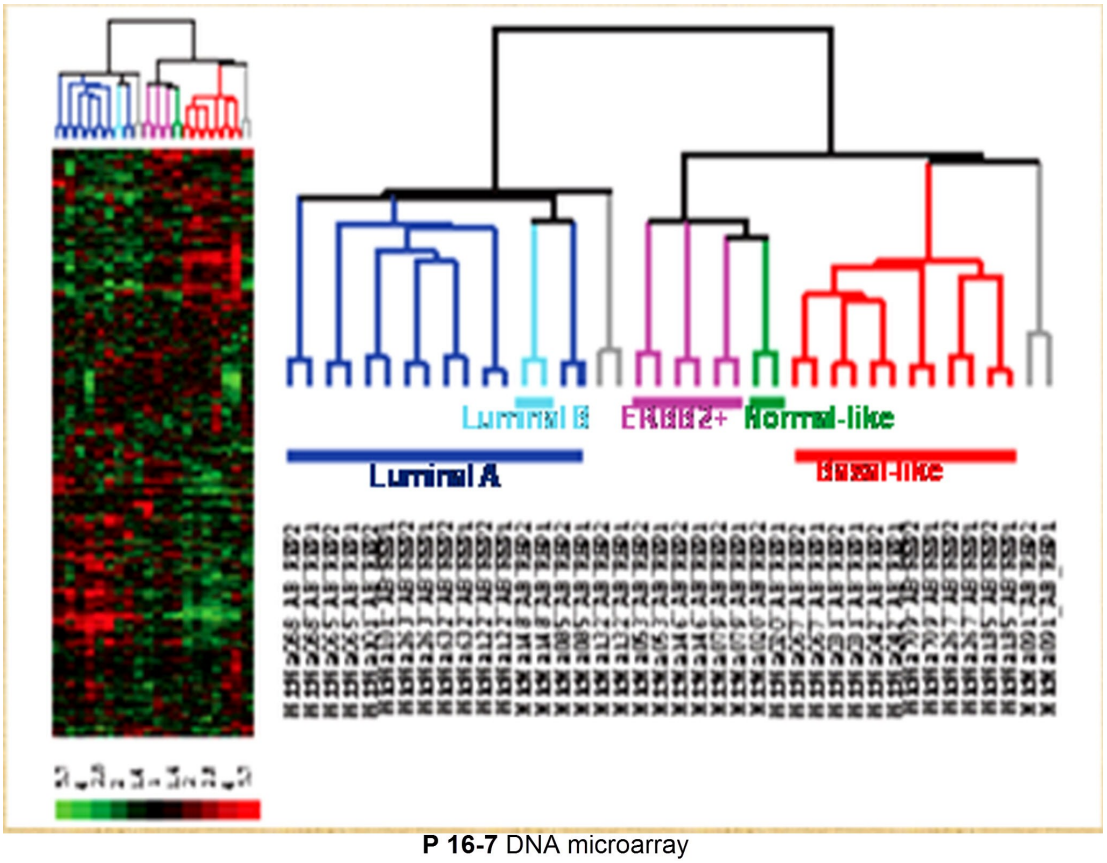
P 16-4 Compartive genomic hypridization



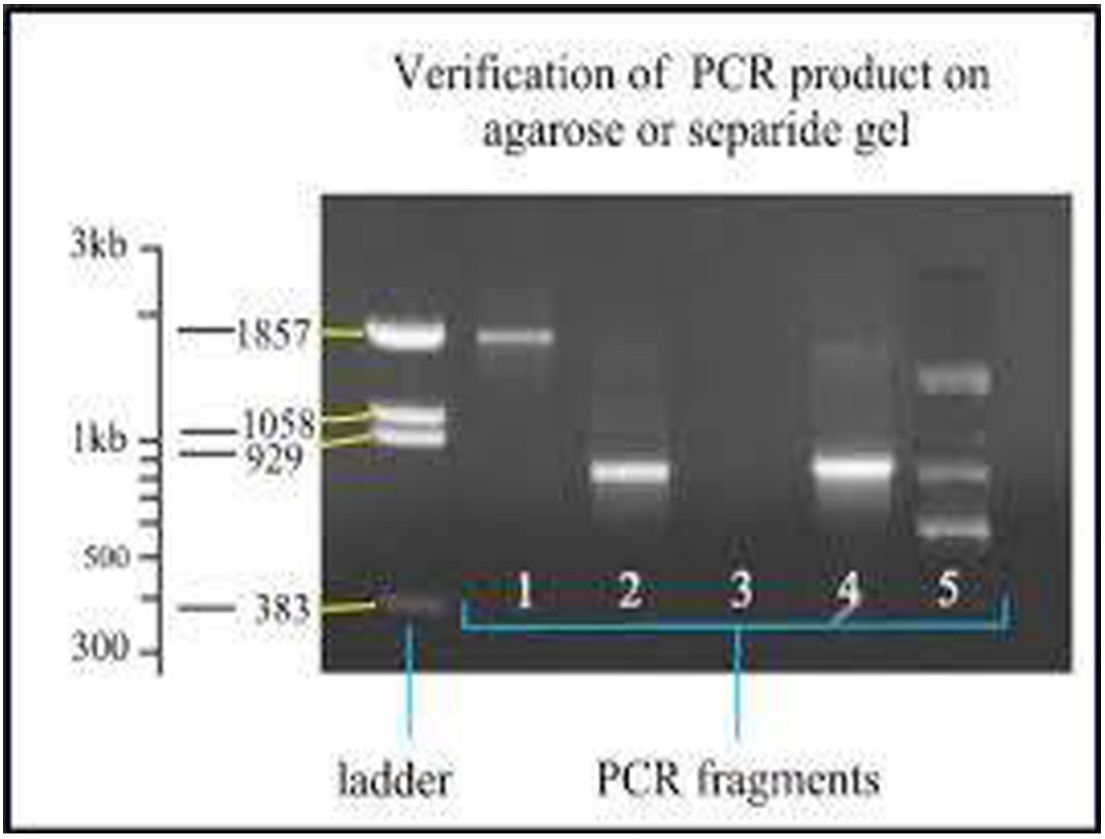
P 16-5 Her-2 amplified as evident by clusters of orange signals with 2 green dots of CEP17



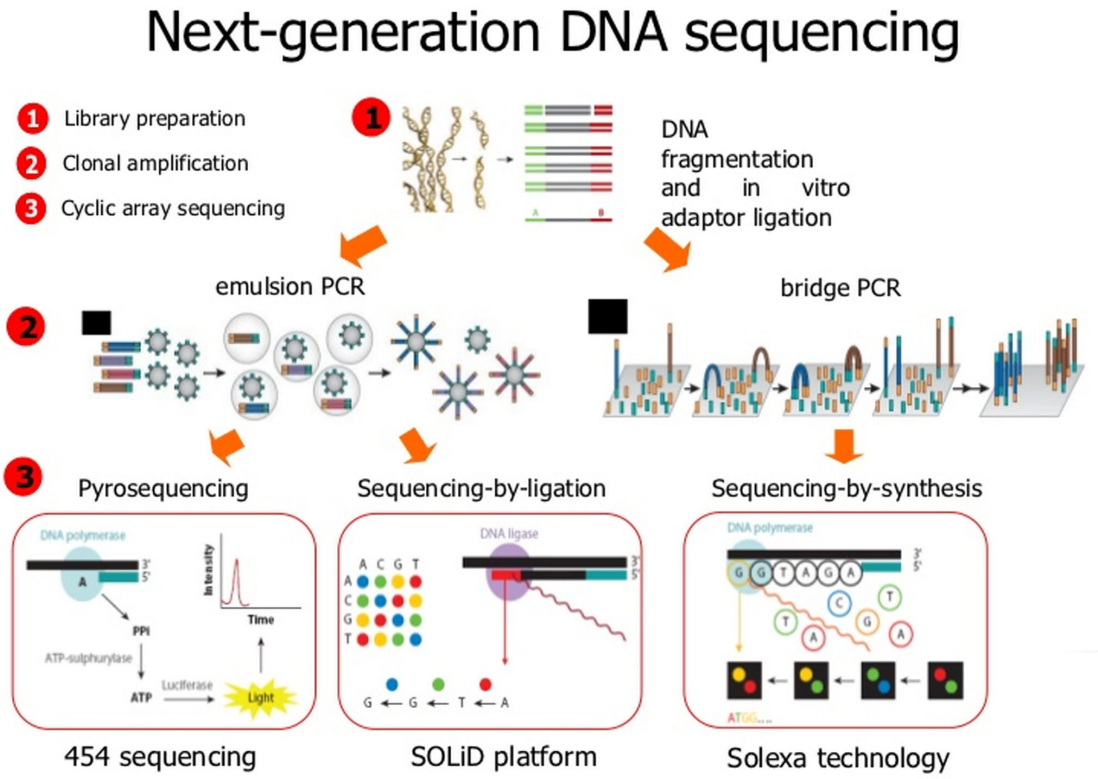
P 16-6 Her-2 amplified SISH technique



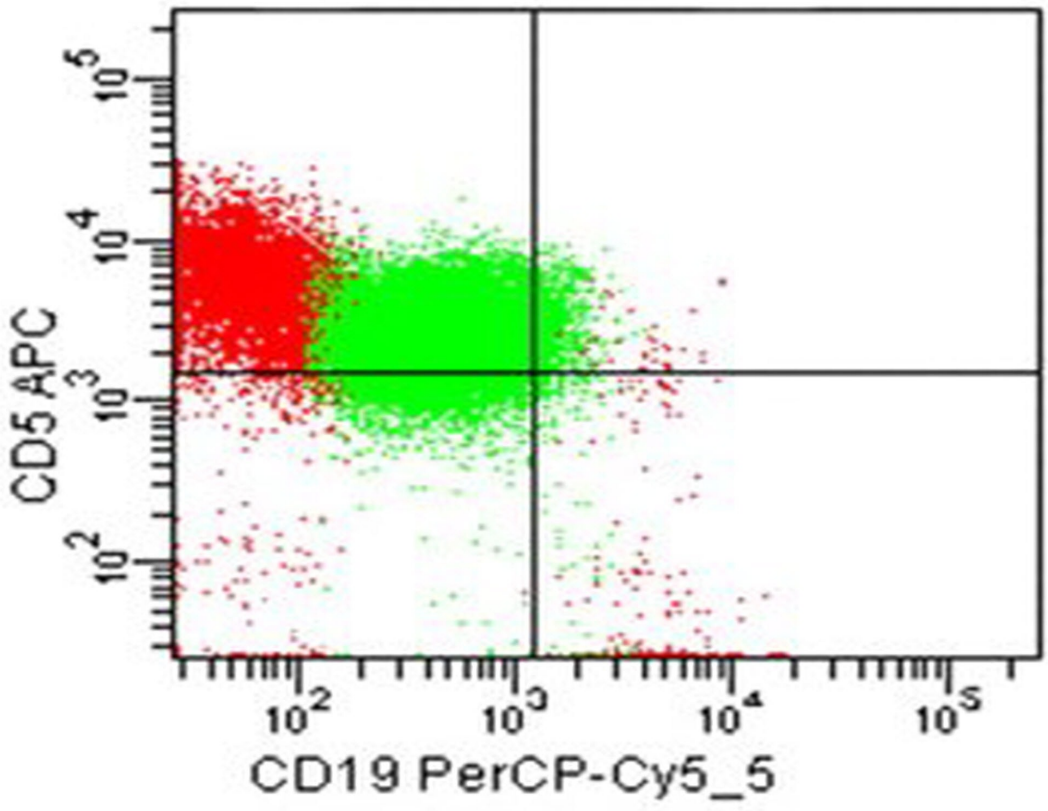
P 16-7 DNA microarray



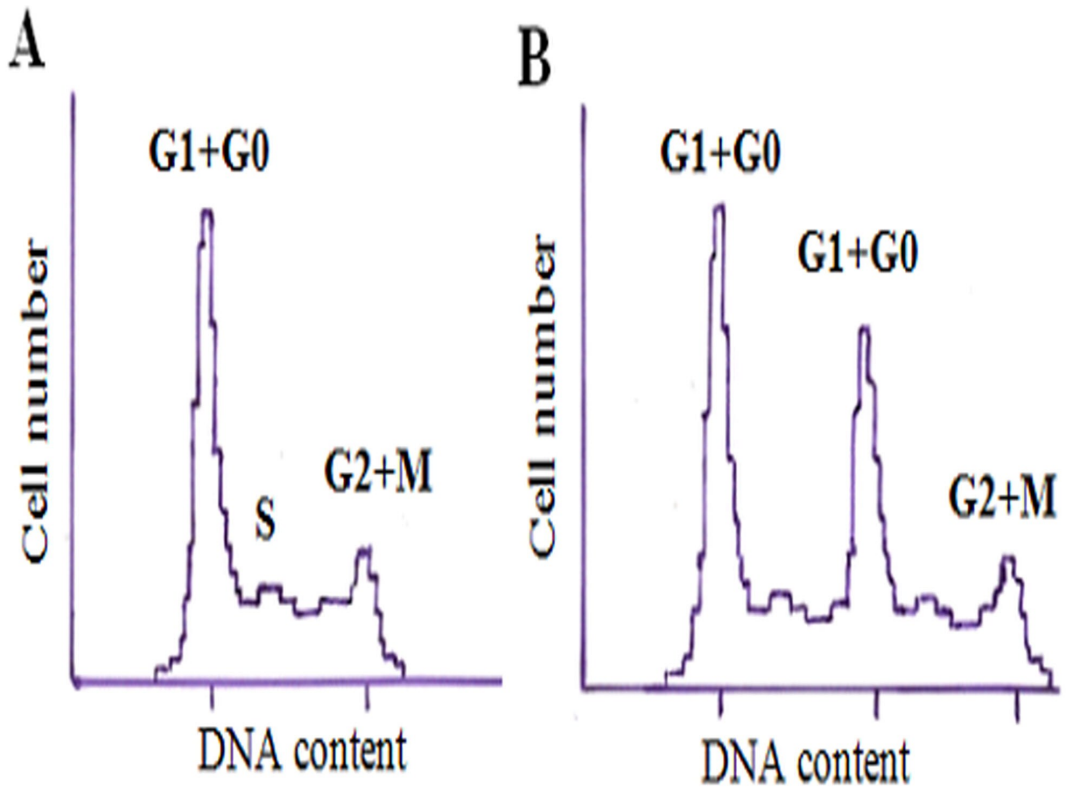
P 16-8 Southern blot



P 16-9 Steps of next generation sequencing

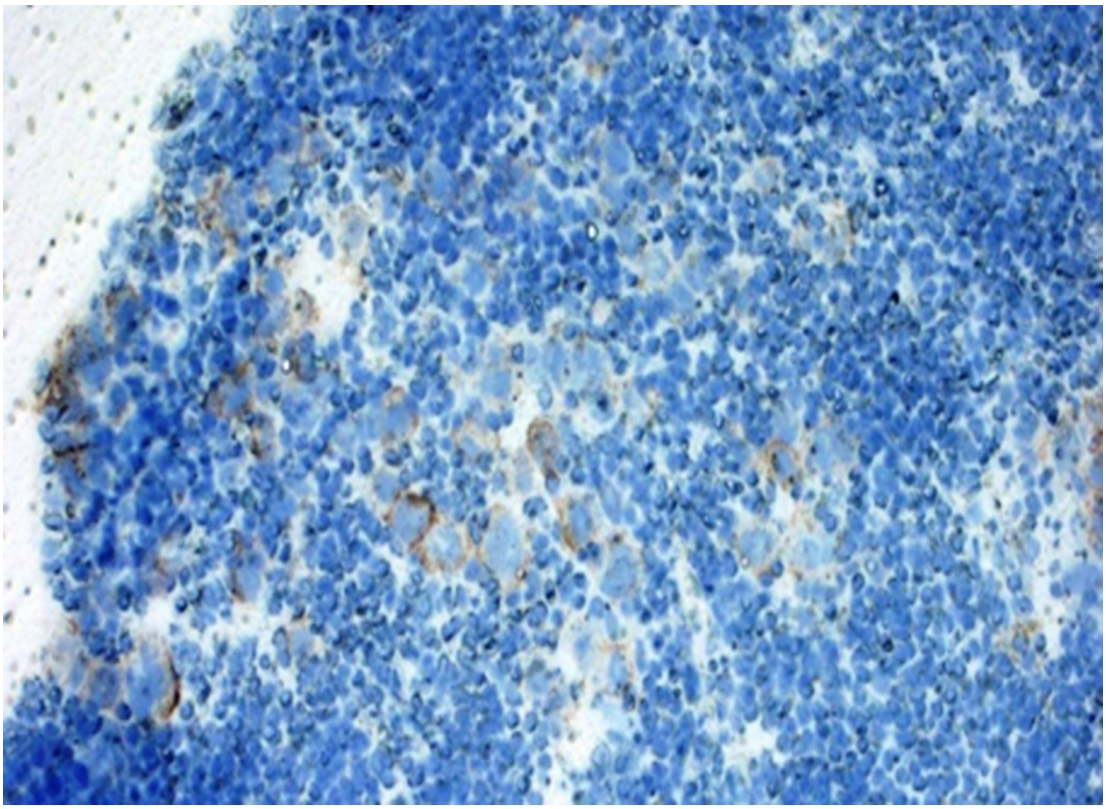


P 16-10 Multicolor flow cytometry

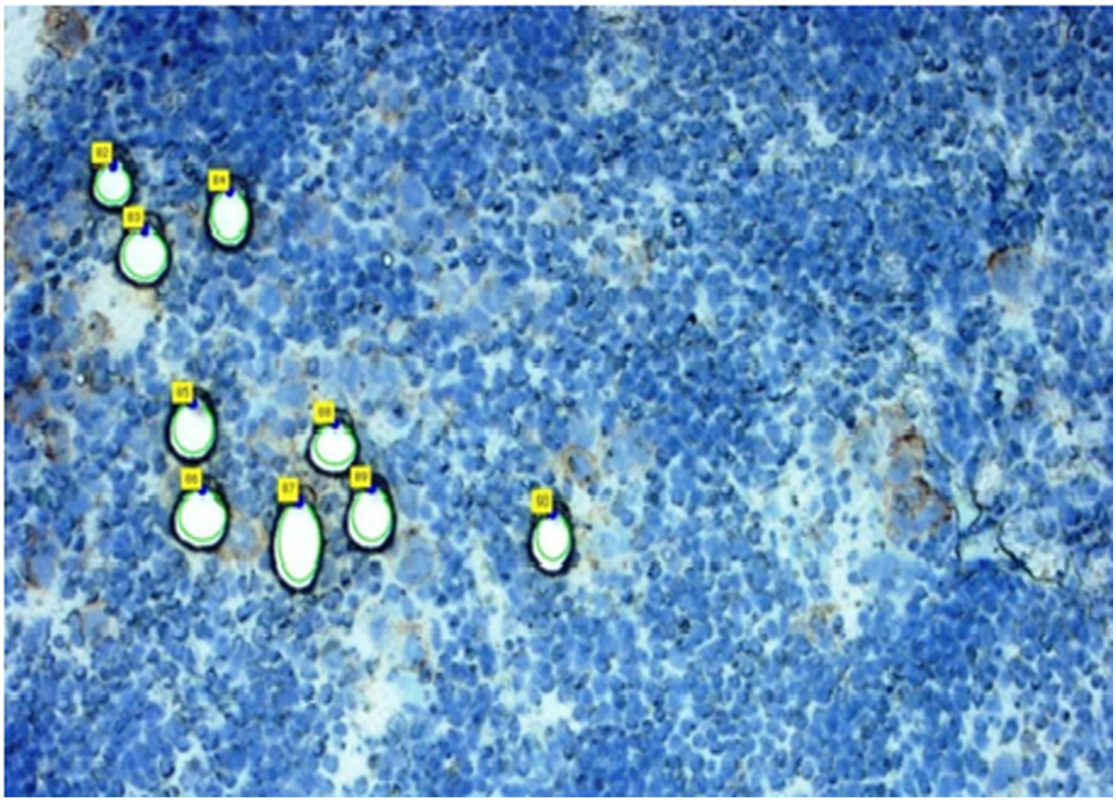


P 16-11 DNA quantitative histogrames. A. Normal pattern. B.Anueploid pattern.

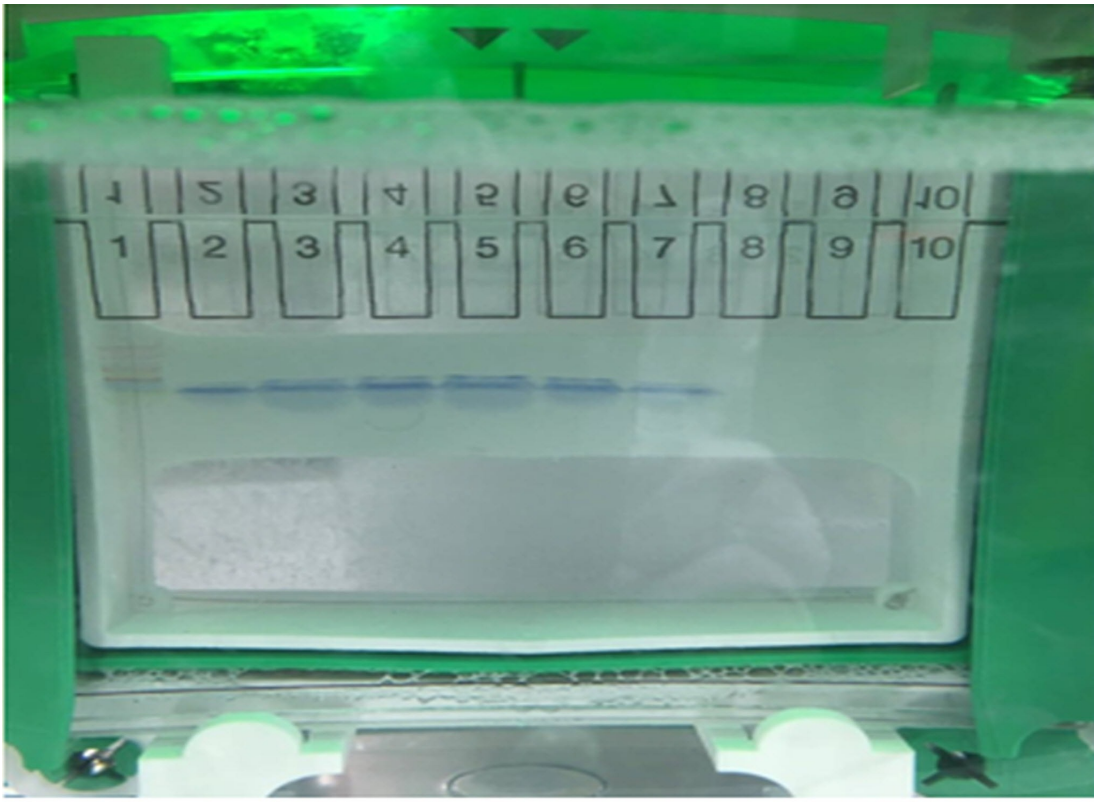
P 16-12 LASER microdissection (Equipment setup)



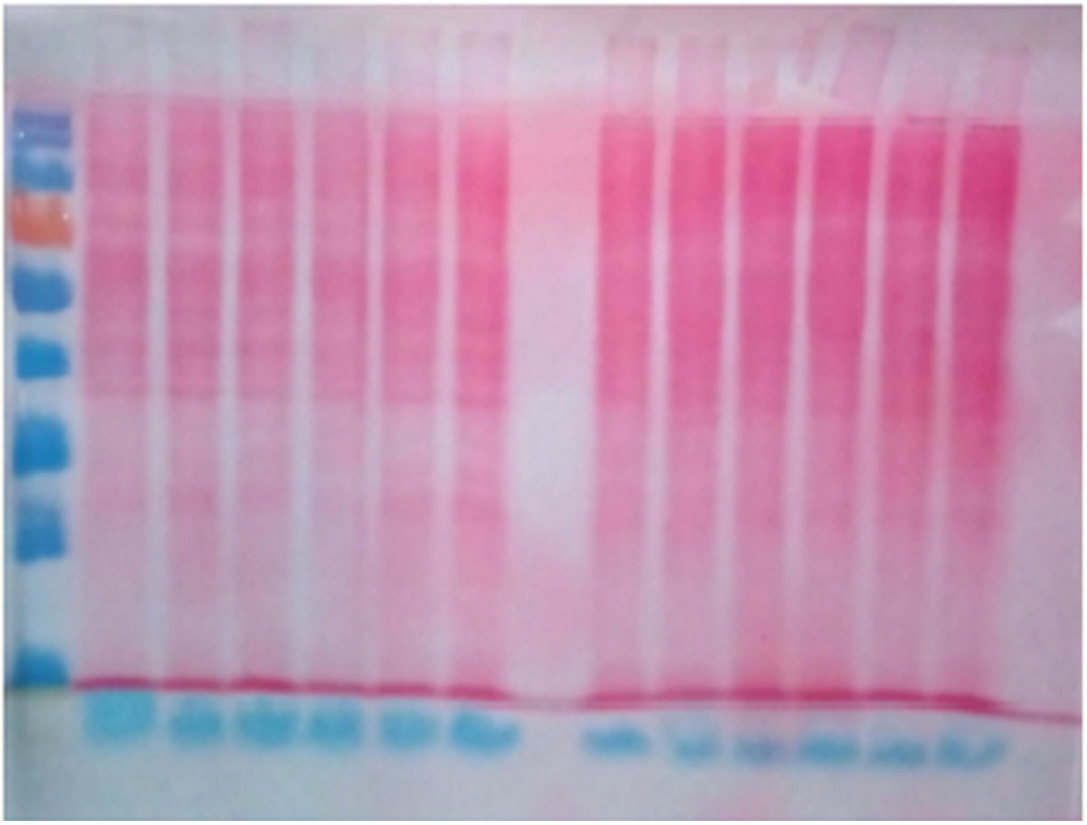
P 16-13 Frozen section of classic Hodgkin lymphoma with CD30 positive Reedd-Sternberg giant cells (Brownish reaction)



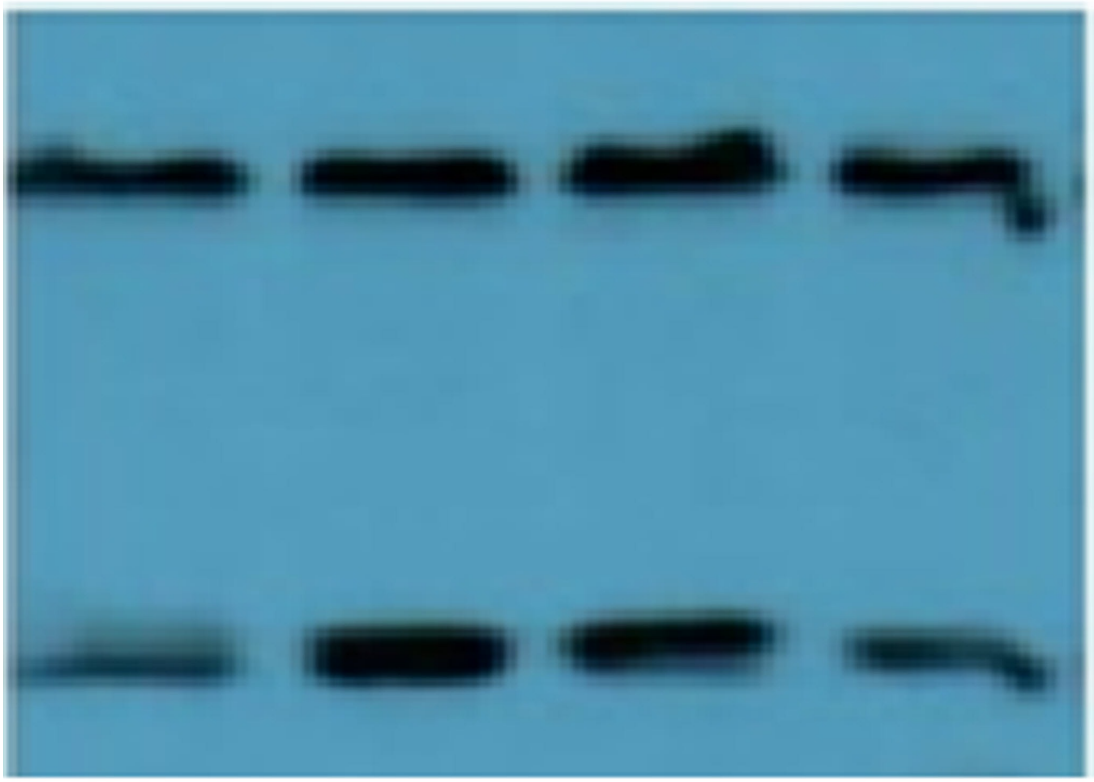
P 16-14 Holes in the tissue section after capture and removal of the Reed--Sternberg giant cells



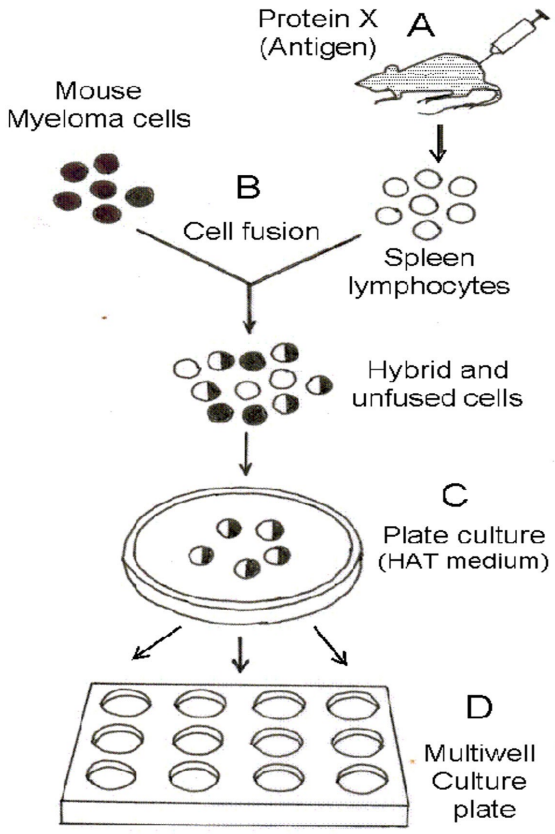
P 16-15 Sodium dodecyl sulphate (SDS) separation of proteins by polyacrylamide gel electrophoresis.



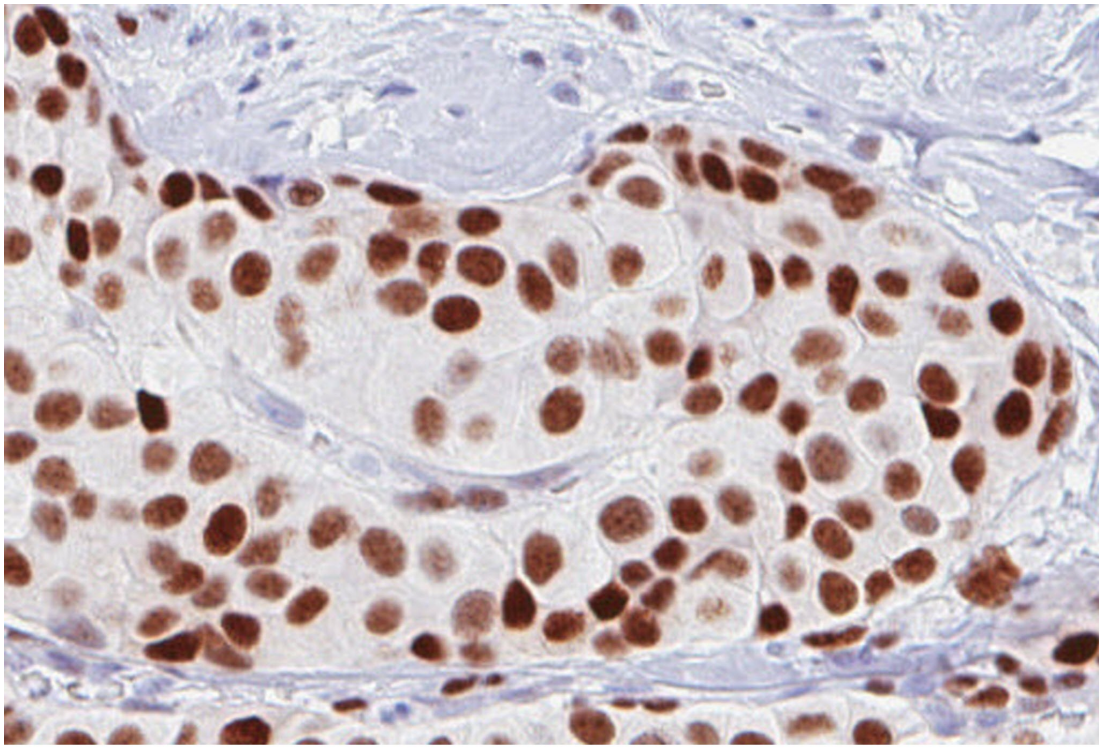
P 16-16 Western blotting of proteins through gel electrophoresis



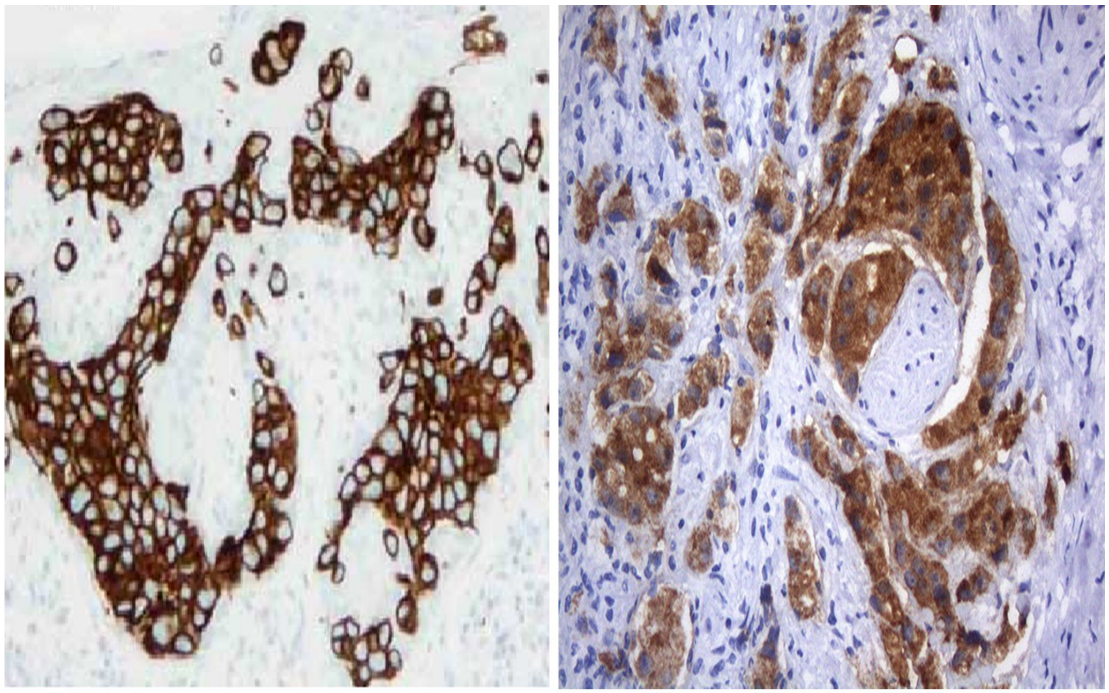
P 16-17 Visualization of target protein by staining gel with dye, metal ions or fluorescent stains.



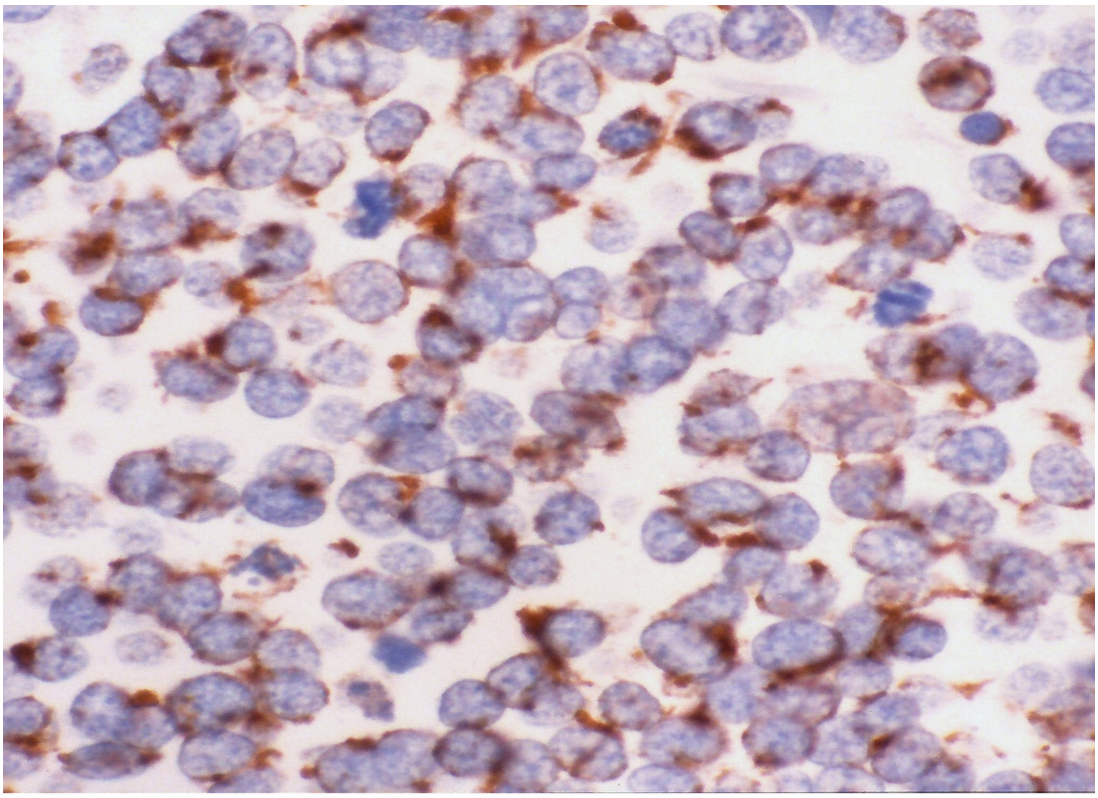
***P* 16-18** Production of monoclonal antibodies by the hybridoma technology. (A) A mouse is immunized with protein X. (B) Spleen lymphocytes are fused with the immortal mouse myeloma cells with the help of propylene glycol. (C) Plate culture on HAT medium, only fused (hybrid) cells will grow, and (D) Culture of each cell clone in multiwell culture and each well is tested for specific antibodies against protein X.



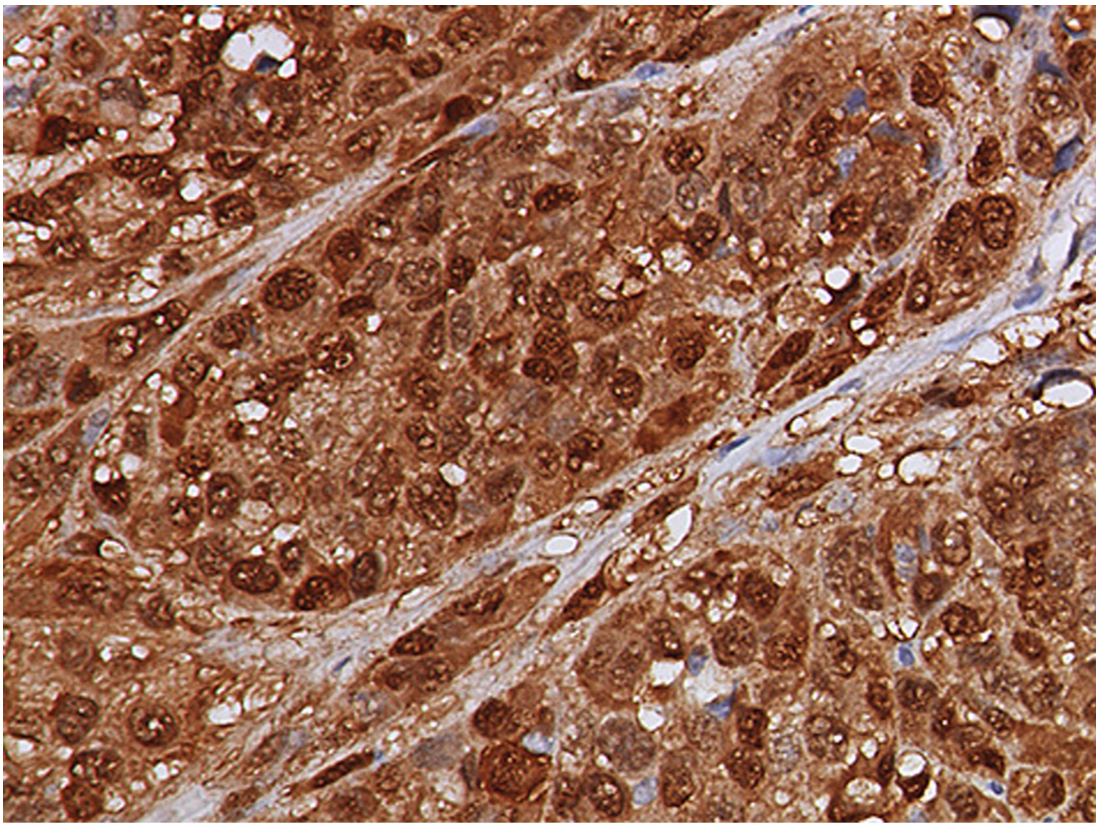
P16-19 Nuclear immunoreactivity **A.** Transcription factors : BCL-6, Beta-catenin, Brachyury , CDX-2, Cycling D-1, Myogenin, ER, PR, Ki-67, P-53, P-63, TTF-1, TEF-3, TLE-1, SALL-4, Pax (2,5,8), Sox-10, 50 X11, Fli-1, INI-1, WT-1 **B.** Nuclear Enzymes : TDT, Telomerase. **C.** Proliferation antigen: Ki-67.



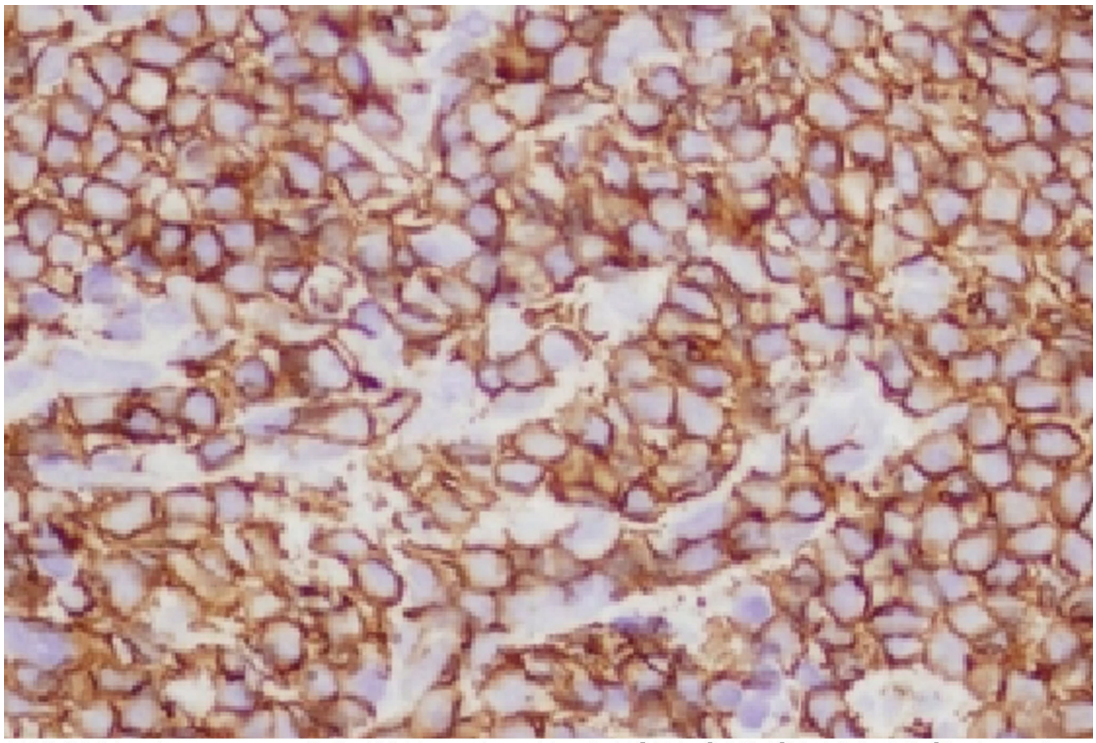
P16-20 Cytoplasmic reactivity **(A)** Diffuse non-granular, *Structural proteins* : CK, Vimentin, Desamin, Actin, GFAP, *Functional proteins* : PSA, BCL-2, Thyroglobulin, MUC-2, Mamoglobin, *Apoptosis markers*: Caspases and cleaved cytokeratin 18 (C-Ck18). (**B)** Diffuse granular (localization to cytoplasmic organelles) : Racemase, melan-A, IDH-1 Chromogranin, Hep-Par 1, Napsin, P5015.



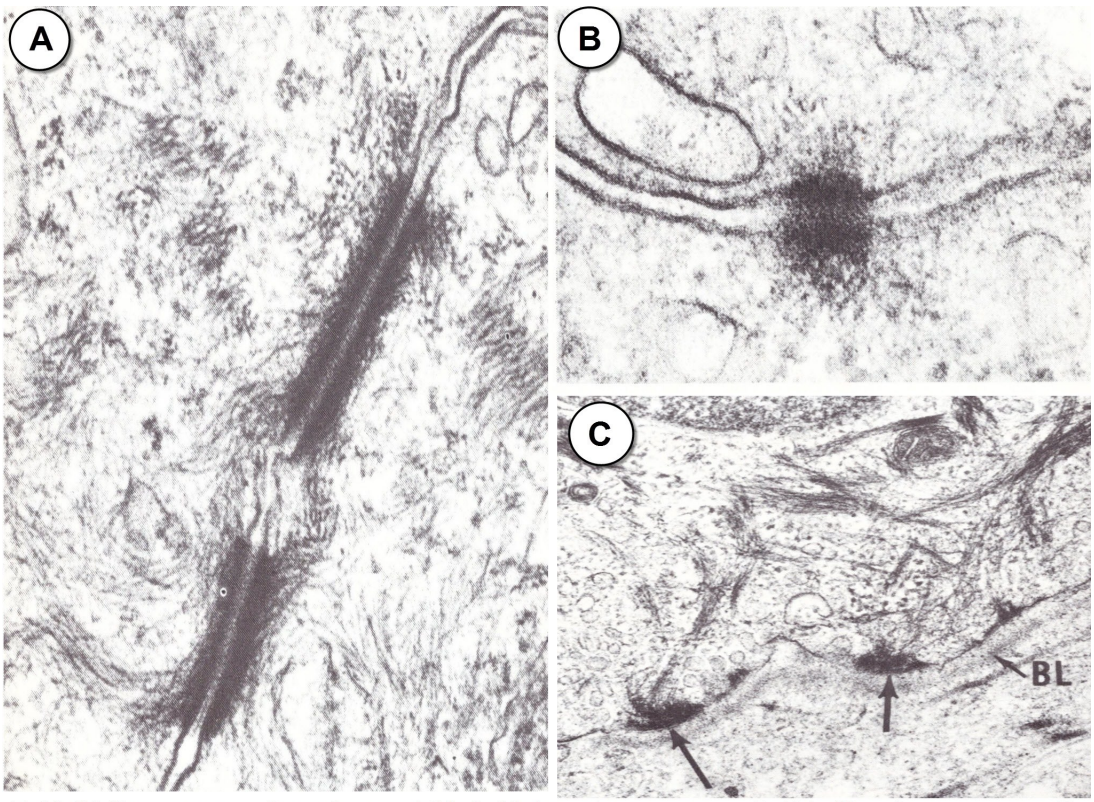
P16-21 Cytoplasmic reactivity. Para nuclear dot-like, related to Golgi apparatus : CK in neuroendocrine tumors and Merckel cell carcinoma, CD-15 and CD-30



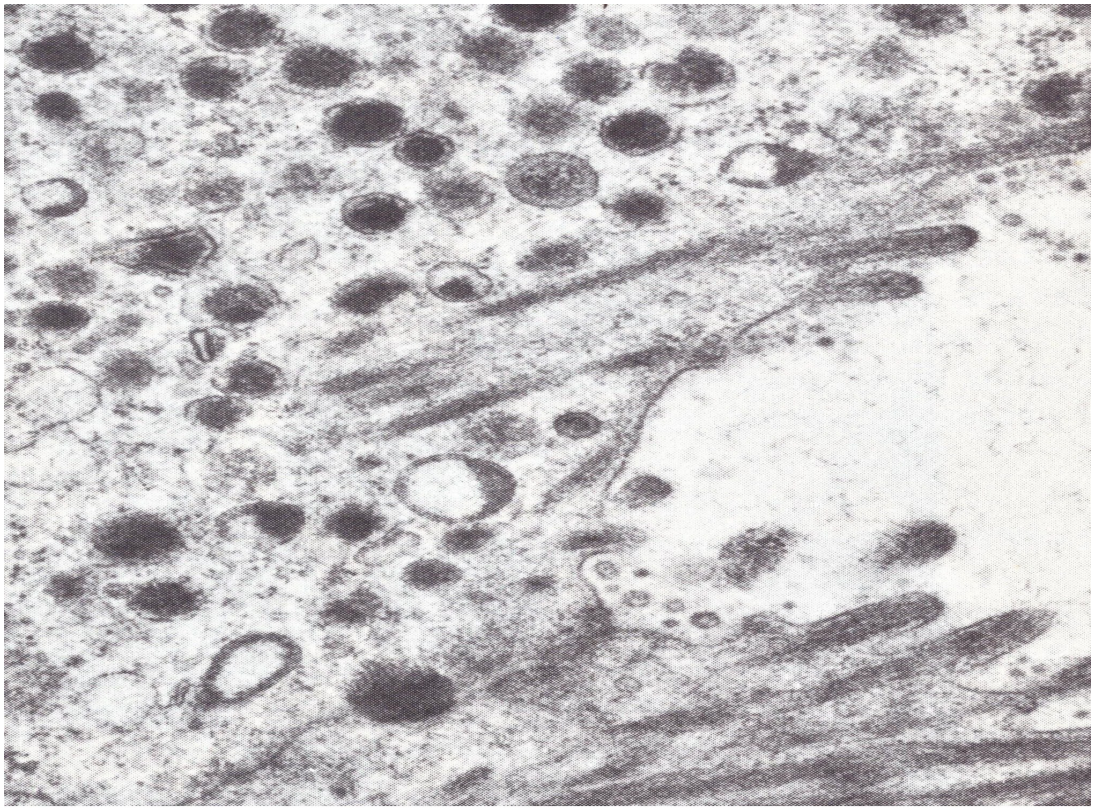
P16-22 Nuclear and cytoplasmic reactivity. S-100, Calretinin, ALK, and P-16



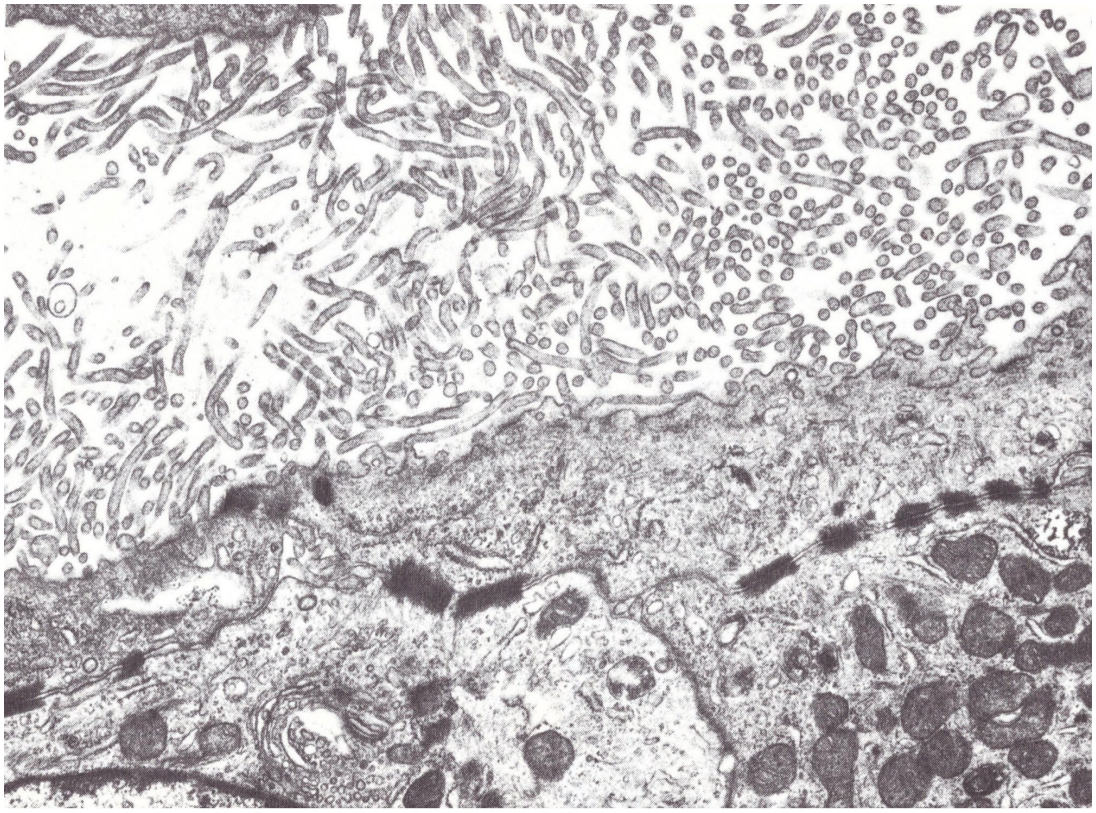
P16-23 Membranous reactivity **(A)** Receptors: Her-2, EGFR, C-Kit (CD-117), **(B)** Clusters of differentiation: CD (2, 3,20,21,23,56), CD-99, CD-19. **(C)** Adhesion molecules: E-cadherin. **(D)** Membrane proteins, D2-40 , CA IX. **(E)** Membranous and cytoplasmic: Dog-1, Uroblakin and EMA (Muc-1).



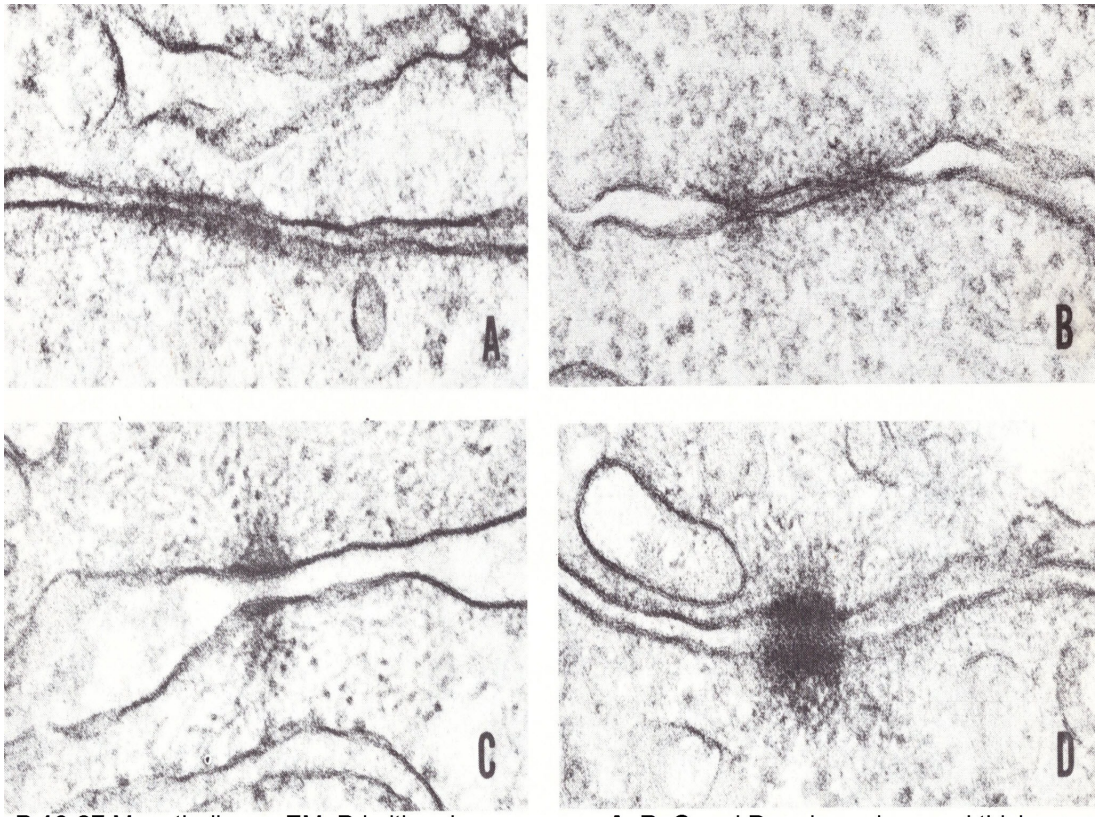
P 16-24 Squamous cell carcinoma. EM. A. Mature desmosomes. B. Primitive desmosomes. C. Hemidesmosomes (arrows) BL=Basal lamina (Basement membrane).



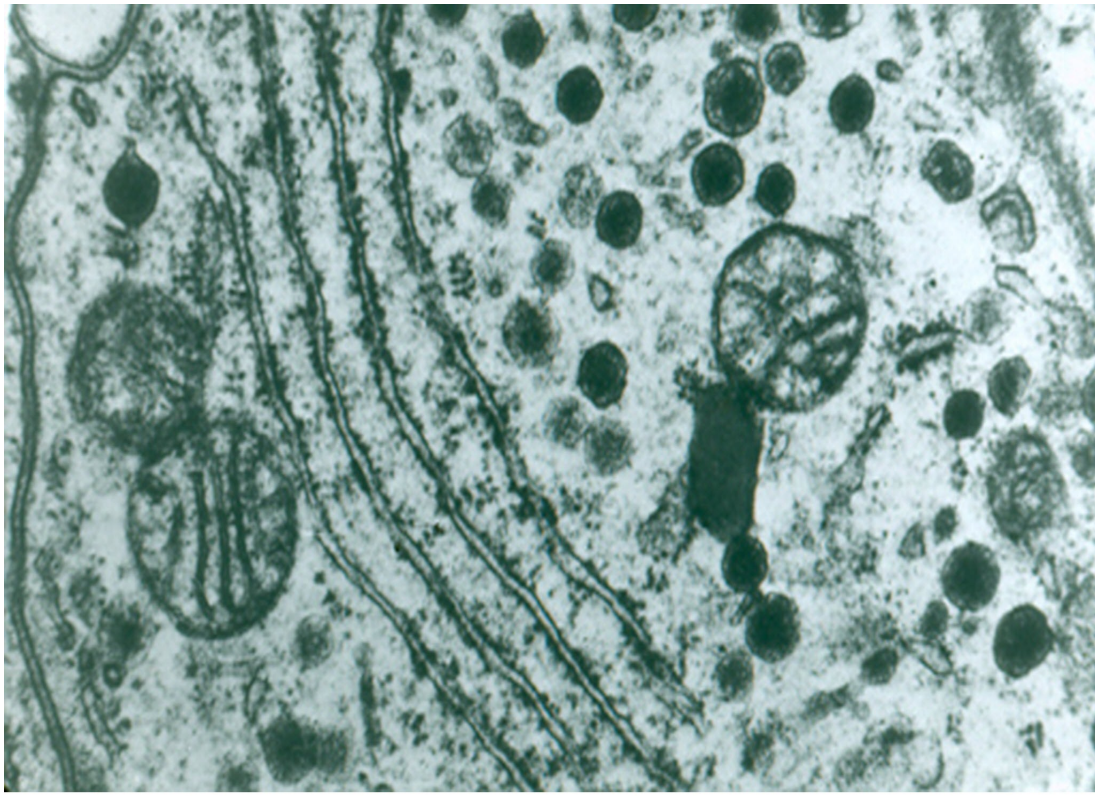
P 16-25 Adenocarcinoma. EM. Short membranous microvilli and secretory granules.



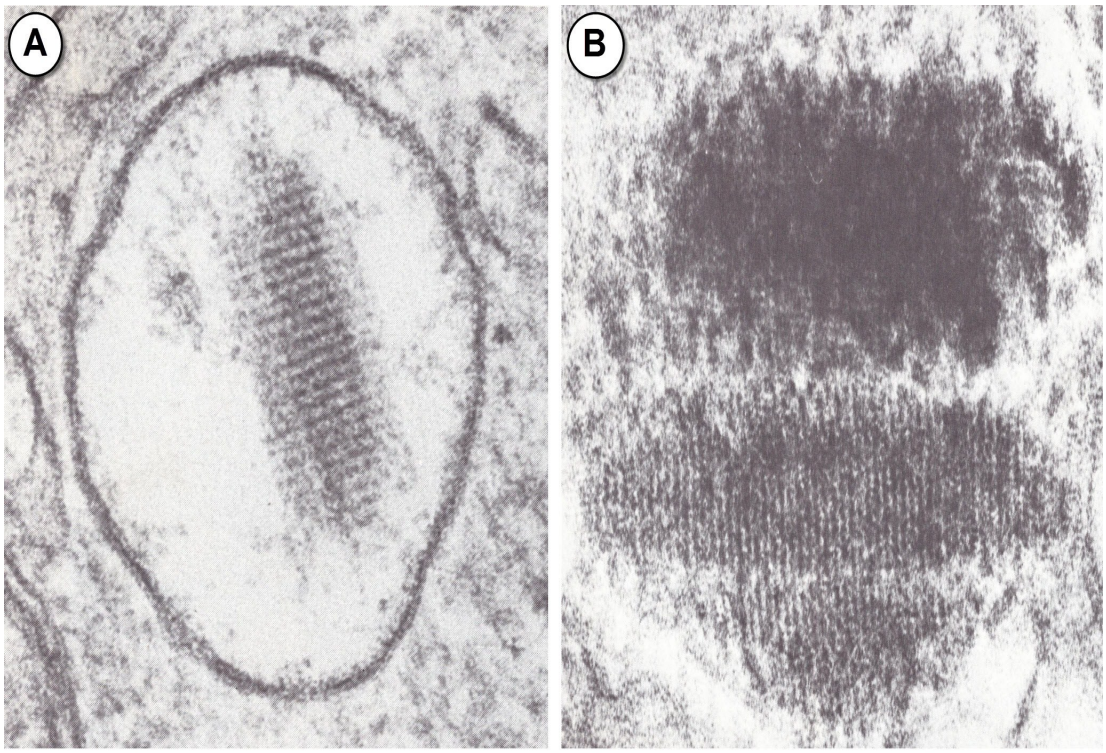
P 16-26 Mesothelioma, EM, long surface microvilli



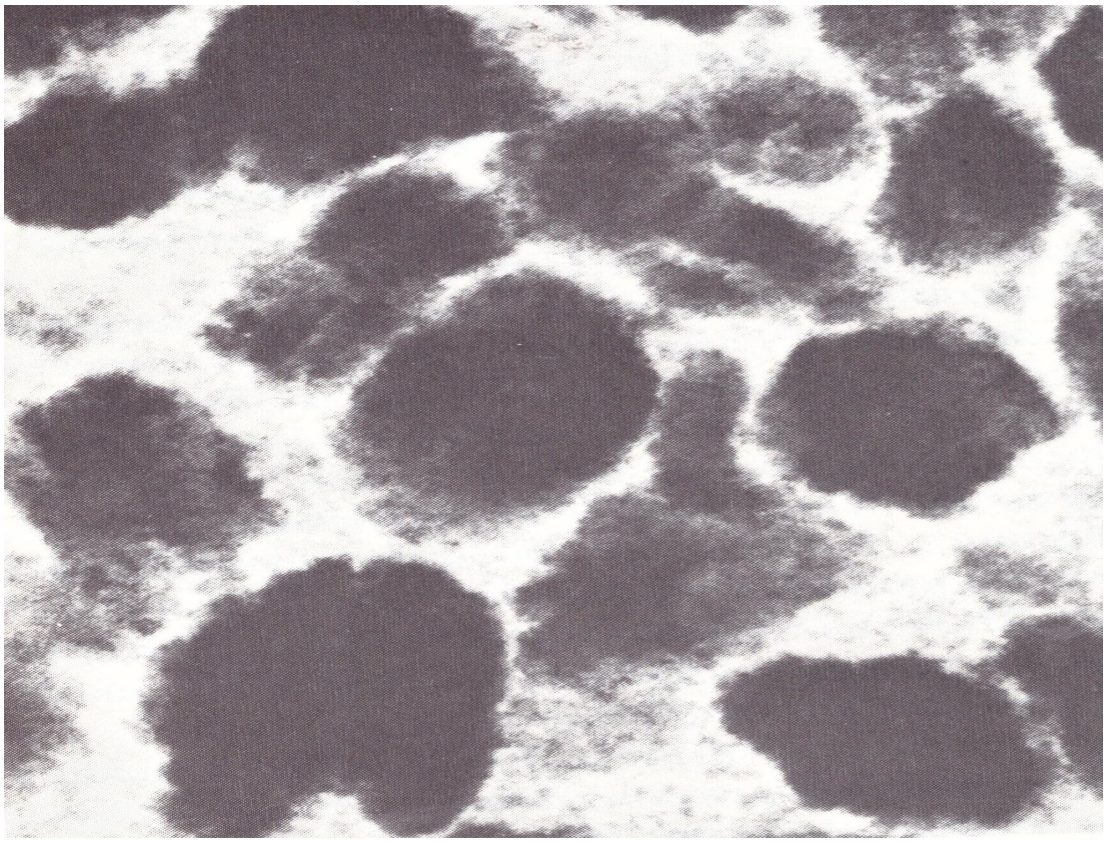
P 16-27 Mesothelioma. EM. Primitive desmosomes, **A, B, C** and **D** various sizes and thickness of basal lamina



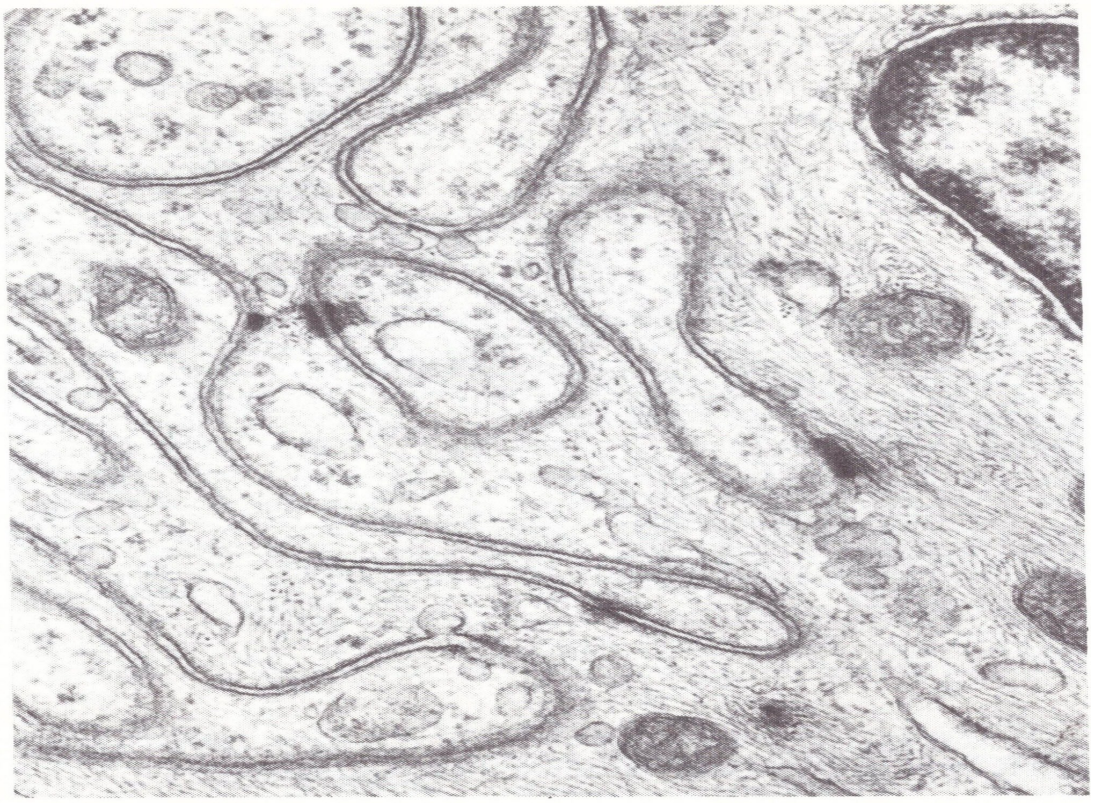
P 16-28 Carcinoid tumor, EM, neuroendocrine granules. Membrane bound multiple uniform, dense core microgranules, (mean size 140 nm).



P 16-29 Primitive desmosomes. Stage I (not shown) formed of empty vesicle. **A.** Stage II, striated laminated structure in the vesicle. **B.** Stage III, deposition of melanin pigment in melanosomes.

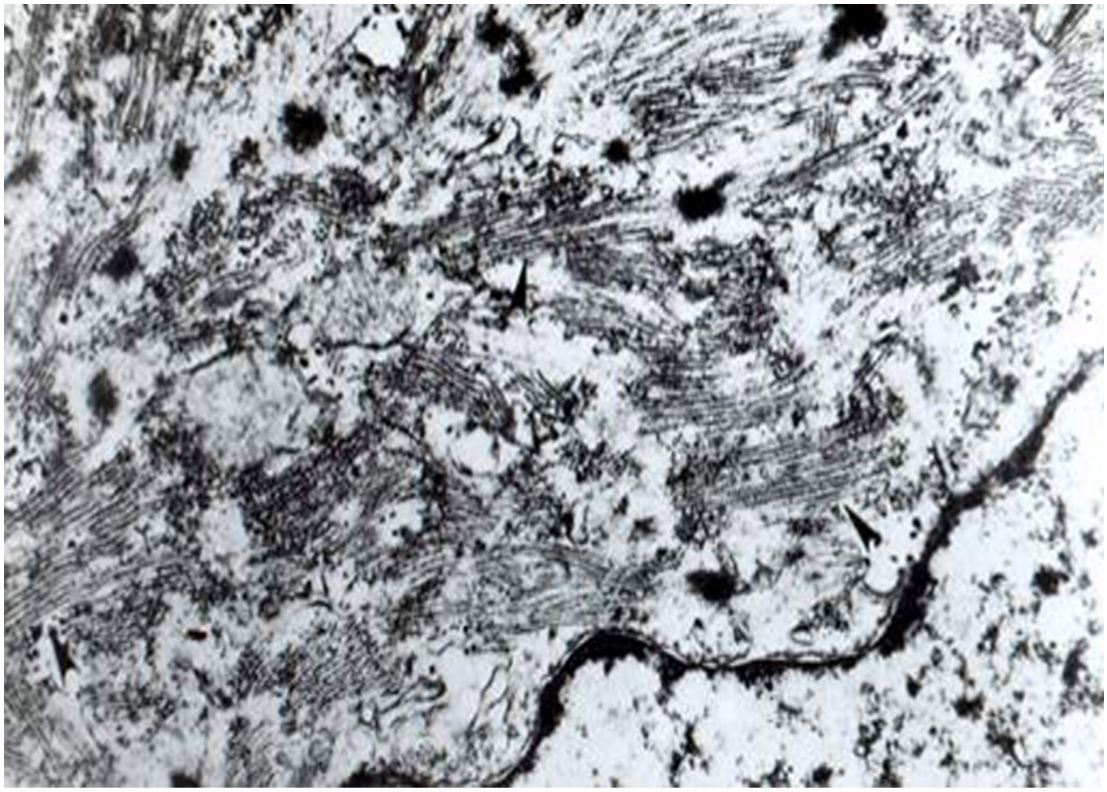


P 16-30 Mature melanosomes, stage III, Ddense melanin pigment..

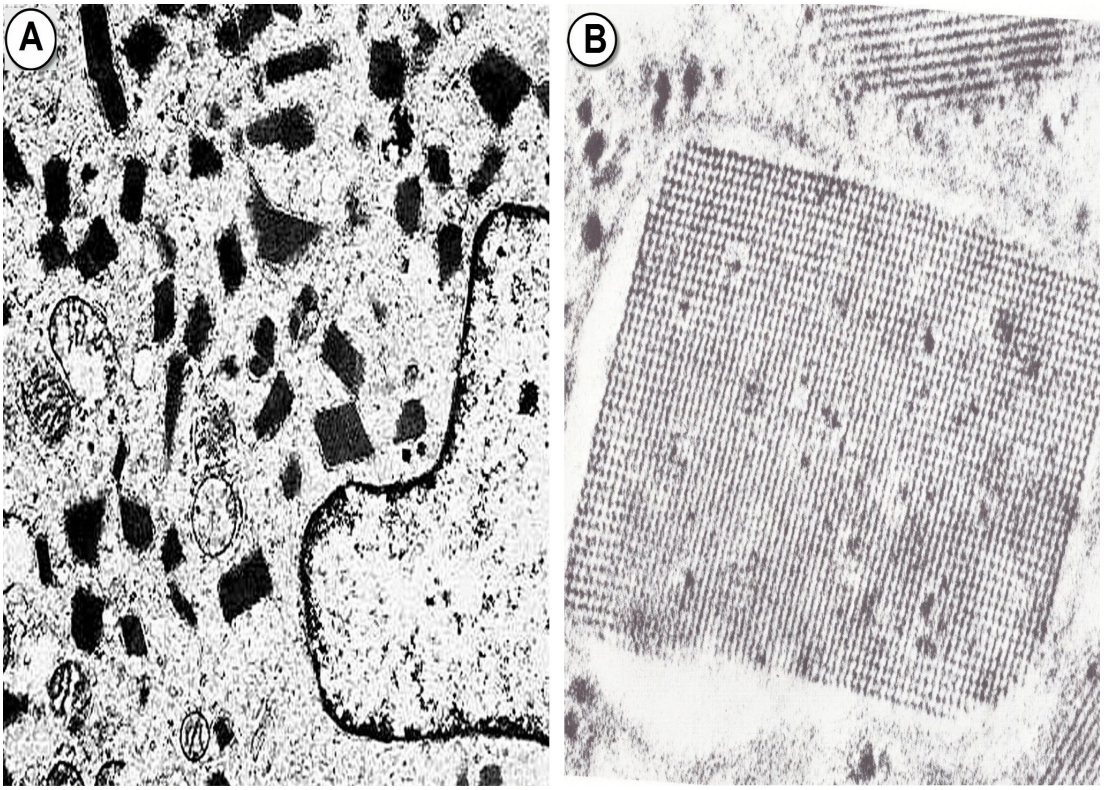


P 16-31 Meningioma. EM. Complex membranous structures.

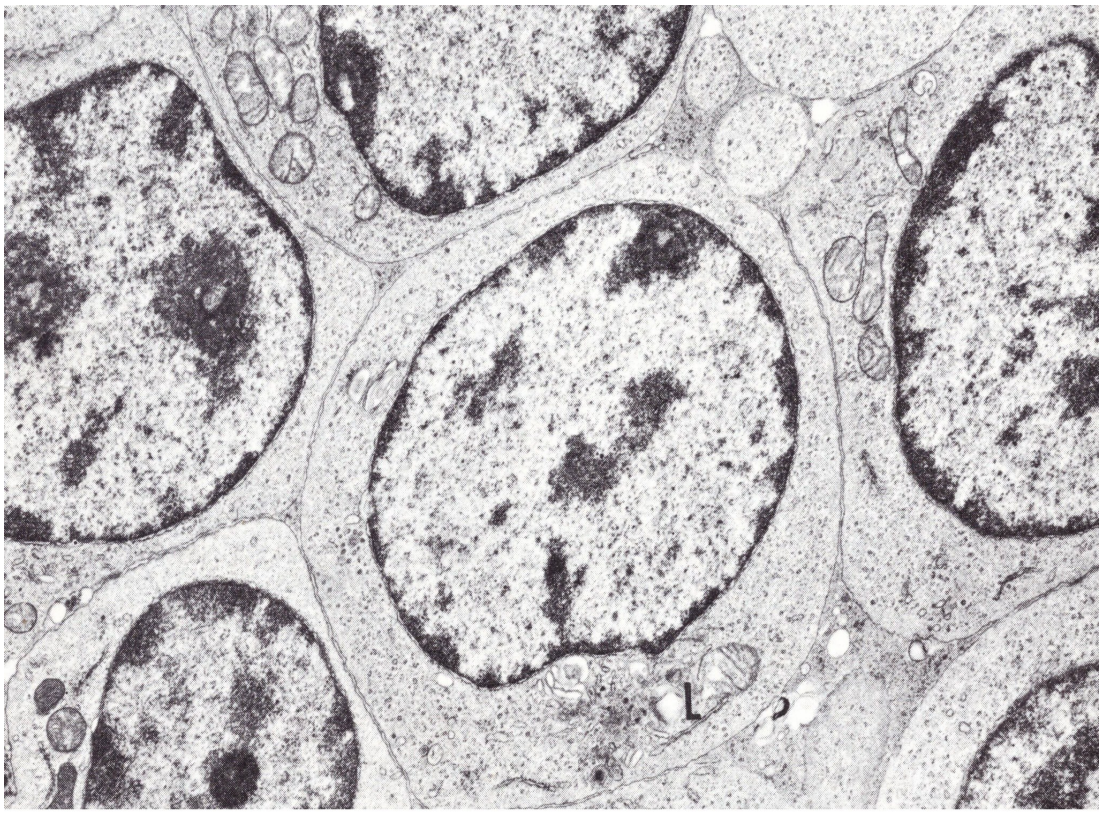
P 16-32 Leiomyosarcoma. EM. Parallel myofilaments at the center of the field.



P 16-33 Rhabdomyosarcoma. EM. Myofilaments (arrow), characteristic thin (actin) and thick (myosin) filaments arranged in sarcomeres.

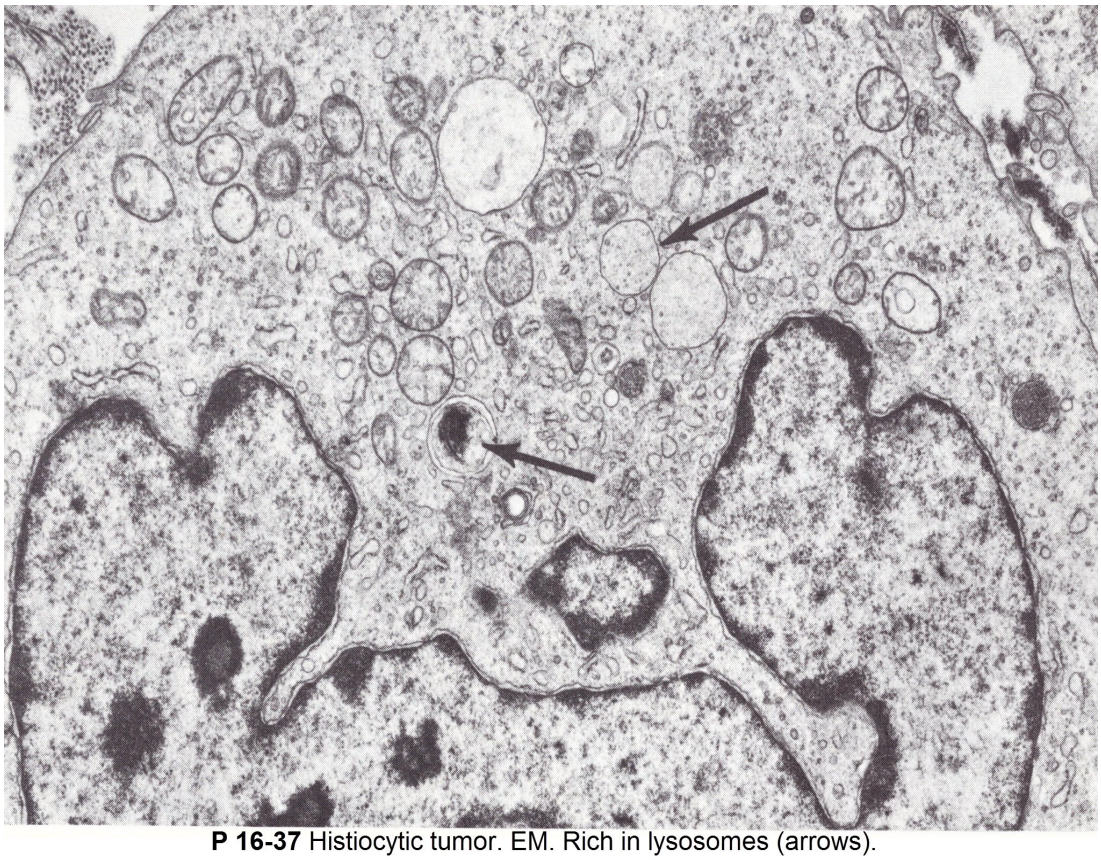


P 16-34 Alveolar soft part sarcoma. **A.** Rhomboid structures in the cytoplasm. **B.** Characteristic cross-grid pattern



P 16-35 Non Hodgkin lymphoma. The cells lack desmosomal attachment.

P 16-36 Langerhans cell histiocytosis. Diagnostic racket shaped Birbick bodies are observed in the cytoplasm.



P 16-37 Histiocytic tumor. EM. Rich in lysosomes (arrows).