

# Problematic

Early cancers are  
easier to treat

Advanced cancer  
Difficult to treat

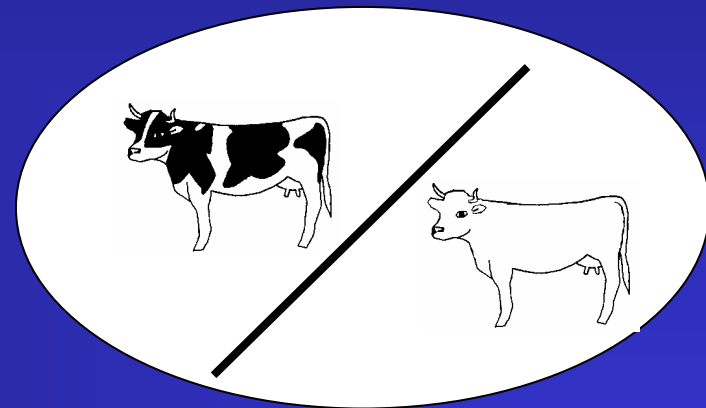
Localized

Metastases

Radiography,  
endoscopy, MRI

Early cancer are  
difficult to detect

Contrast  
Early lesion /  
normal surrounding



FLUORESCENCE  
SPECTROSCOPY OF  
EXOGENOUS,  
EXOGENOUSLY-  
INDUCED AND  
ENDOGENOUS  
FLUOROPHORES FOR  
THE PHOTODETEC  
AND PHOTODYNA  
THERAPY OF CAN

# Principle of fluorescence

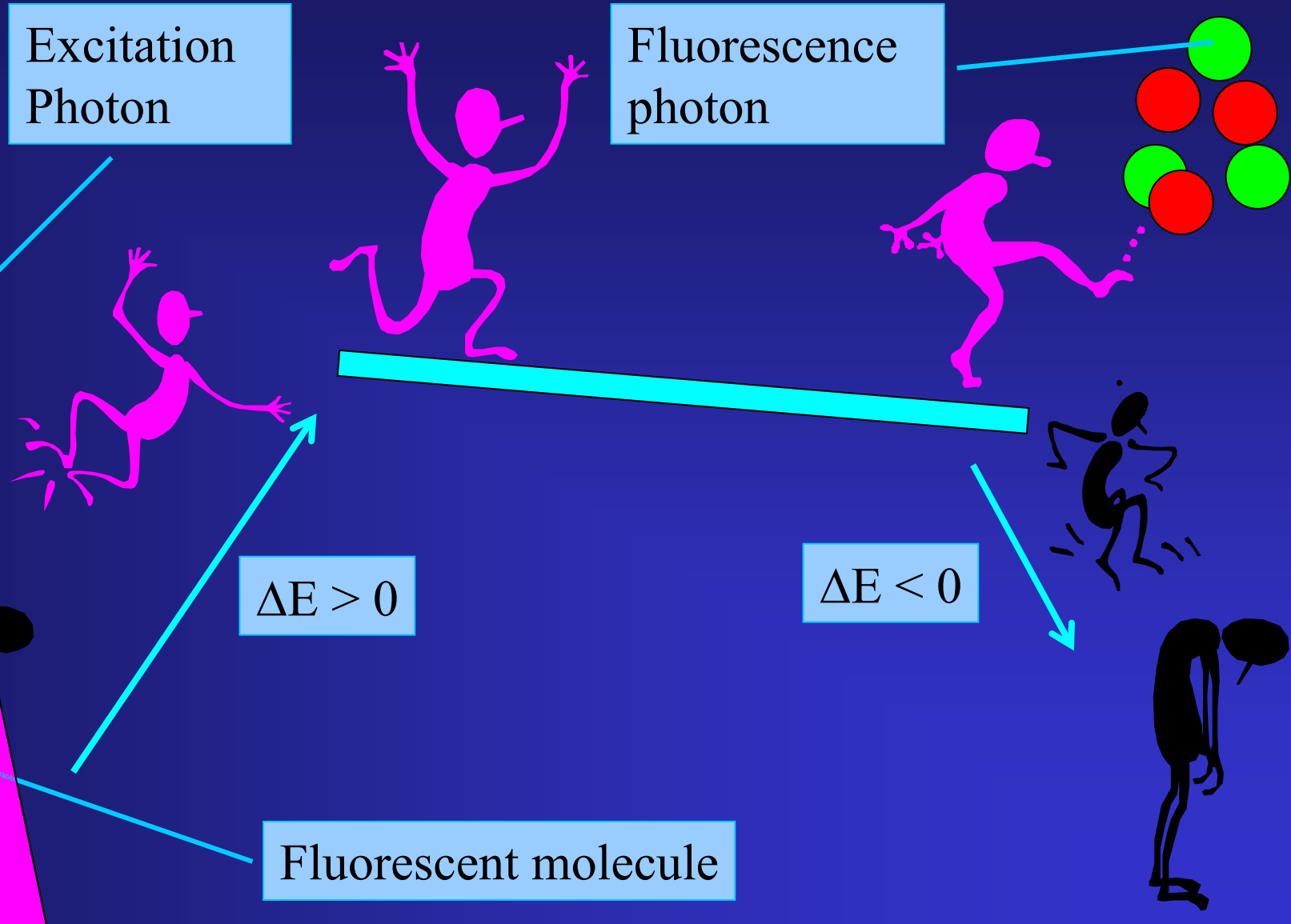
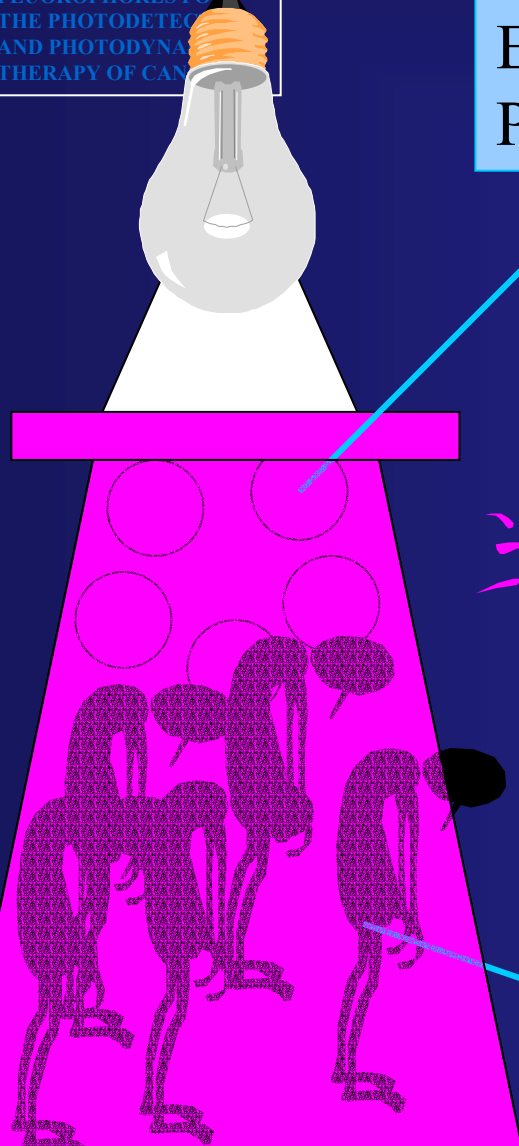
Excitation  
Photon

Fluorescence  
photon

$$\Delta E > 0$$

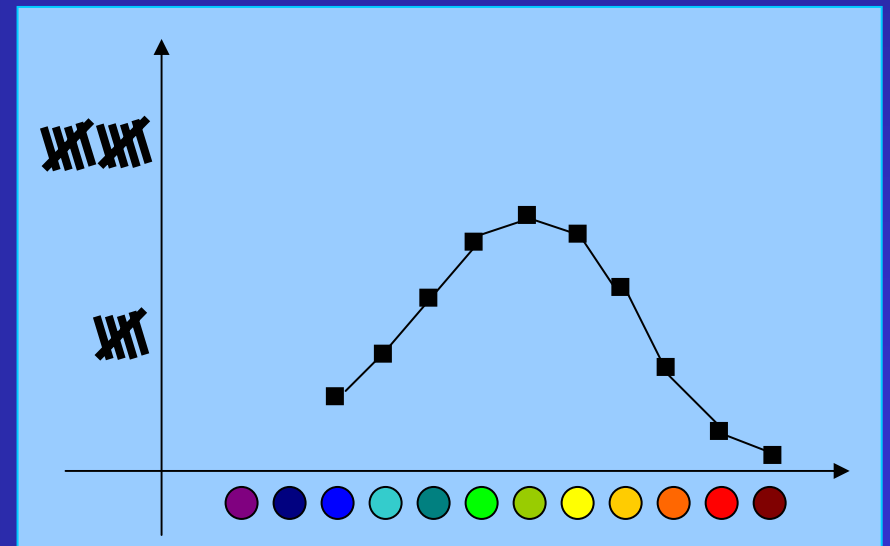
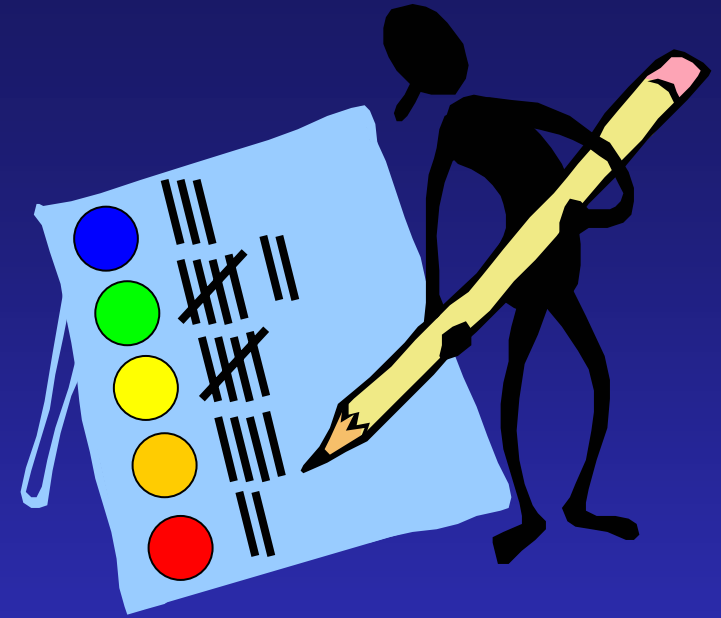
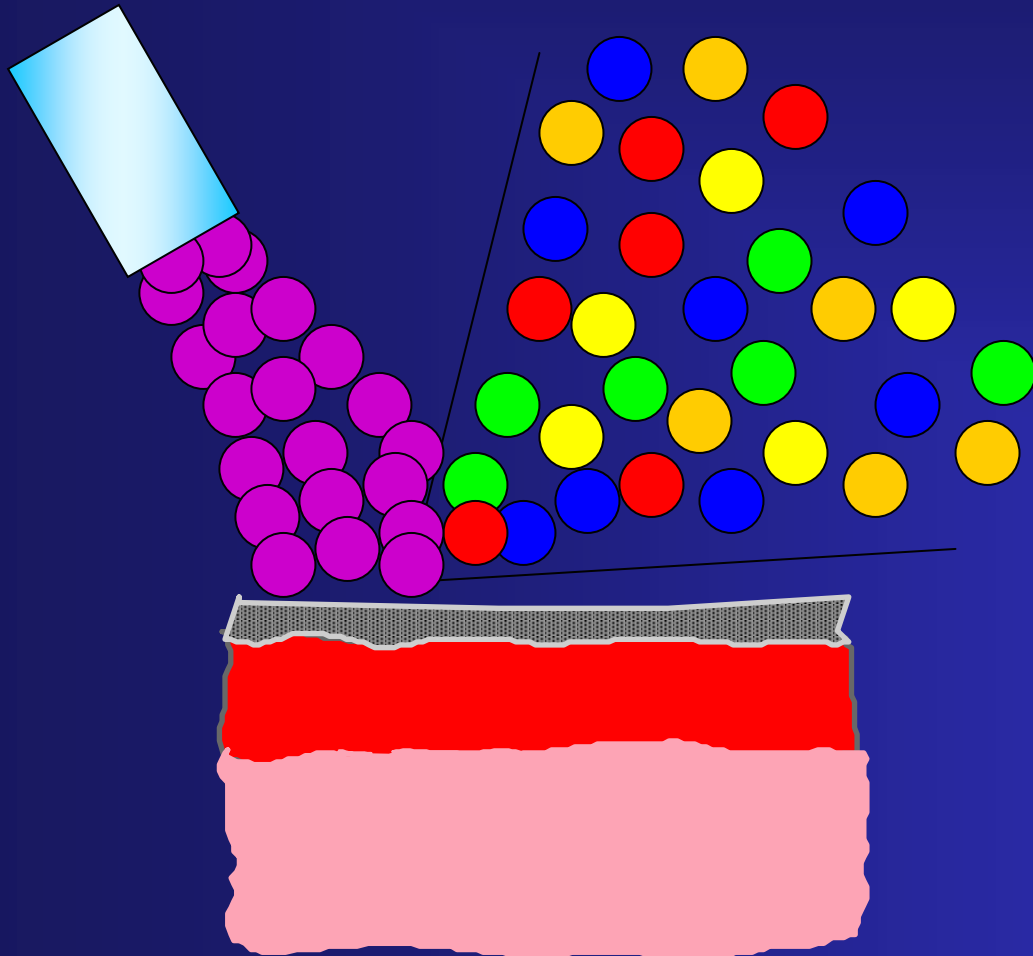
$$\Delta E < 0$$

Fluorescent molecule

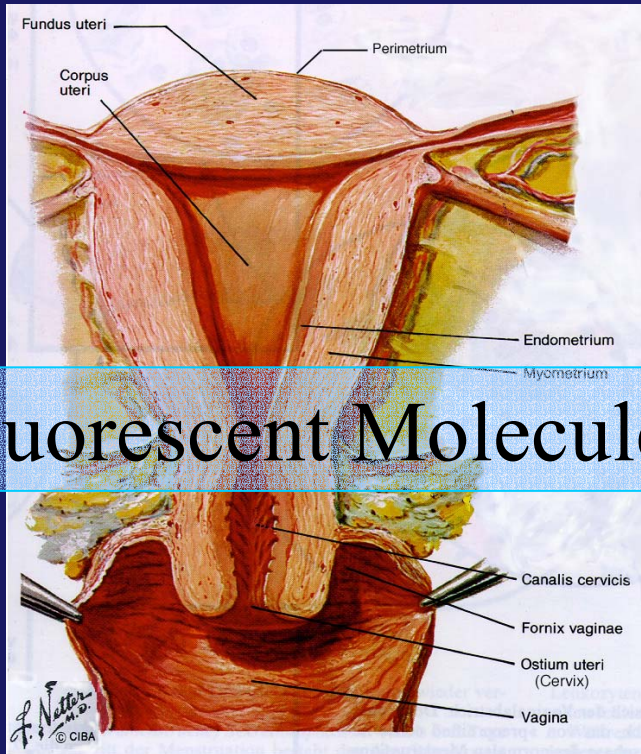


FLUORESCENCE  
SPECTROSCOPY OF  
EXOGENOUS,  
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AND PHOTODYNAMIC  
THERAPY OF CANCER.

# Principle of fluorescence spectroscopy



# Photodetection on the cervix: Exogenous Fluorophores



Fluorescent Molecules ??

Exogenous: mTHPC,  
Lu-Tex, Sytox<sup>®</sup> Green

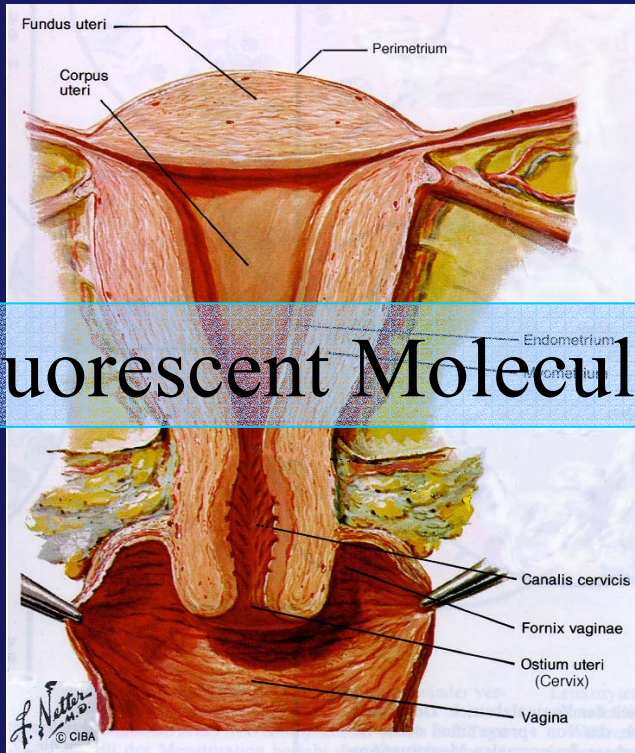
Systemic  
application

Little/No  
Selectivity

Skin retention

Photosensitizing

# Photodetection on the cervix: Endogenously induced fluorophores



Fluorescent Molecules ??

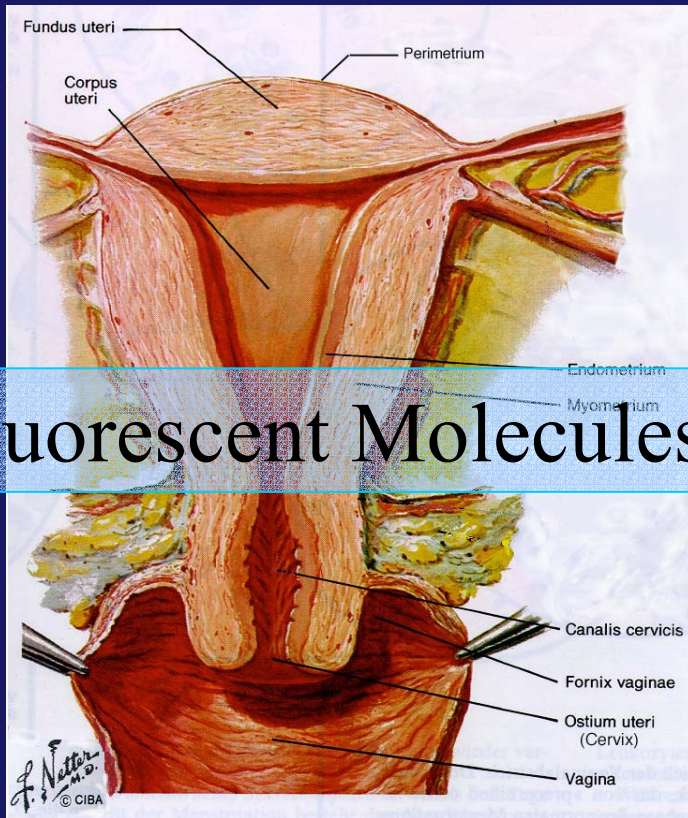
Induced: ALA-PPIX,  
hALA-PPIX

Selective  
No skin retention

Topical application  
(Inconvenient  
in gynecology?)

Photosensitizing

# Photodetection on the cervix: Endogenous Fluorophores

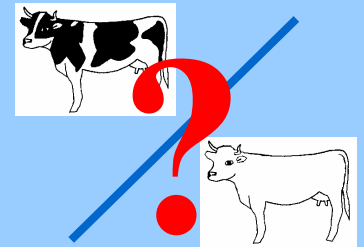


Fluorescent Molecules ??

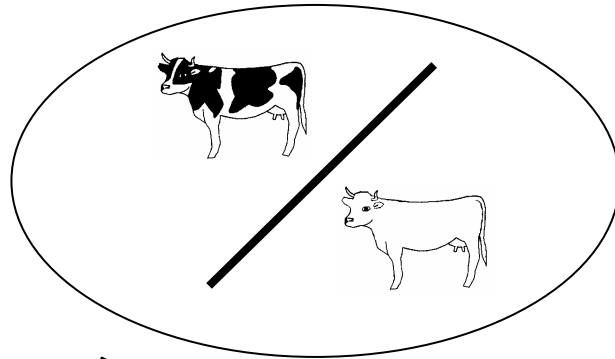
Endogenous: NADH,  
Flavines, porphyrines

Systemic

No  
Photosensitisation



# Autofluorescence spectroscopy



Is autofluorescence useful to induce a contrast between lesion/healthy tissue?

Fluorescence spectroscopy of endogenous fluorophores (autofluorescence)

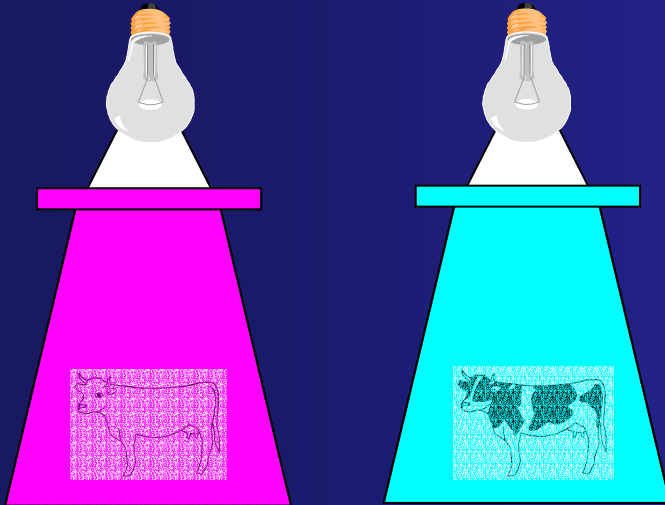
Fluorescence imaging of endogenous fluorophores (autofluorescence)



# Parameters of fluorescence spectroscopy

## Fluorescence Spectroscopy

Excitation wavelength?



Color of fluorescence photons ?

