



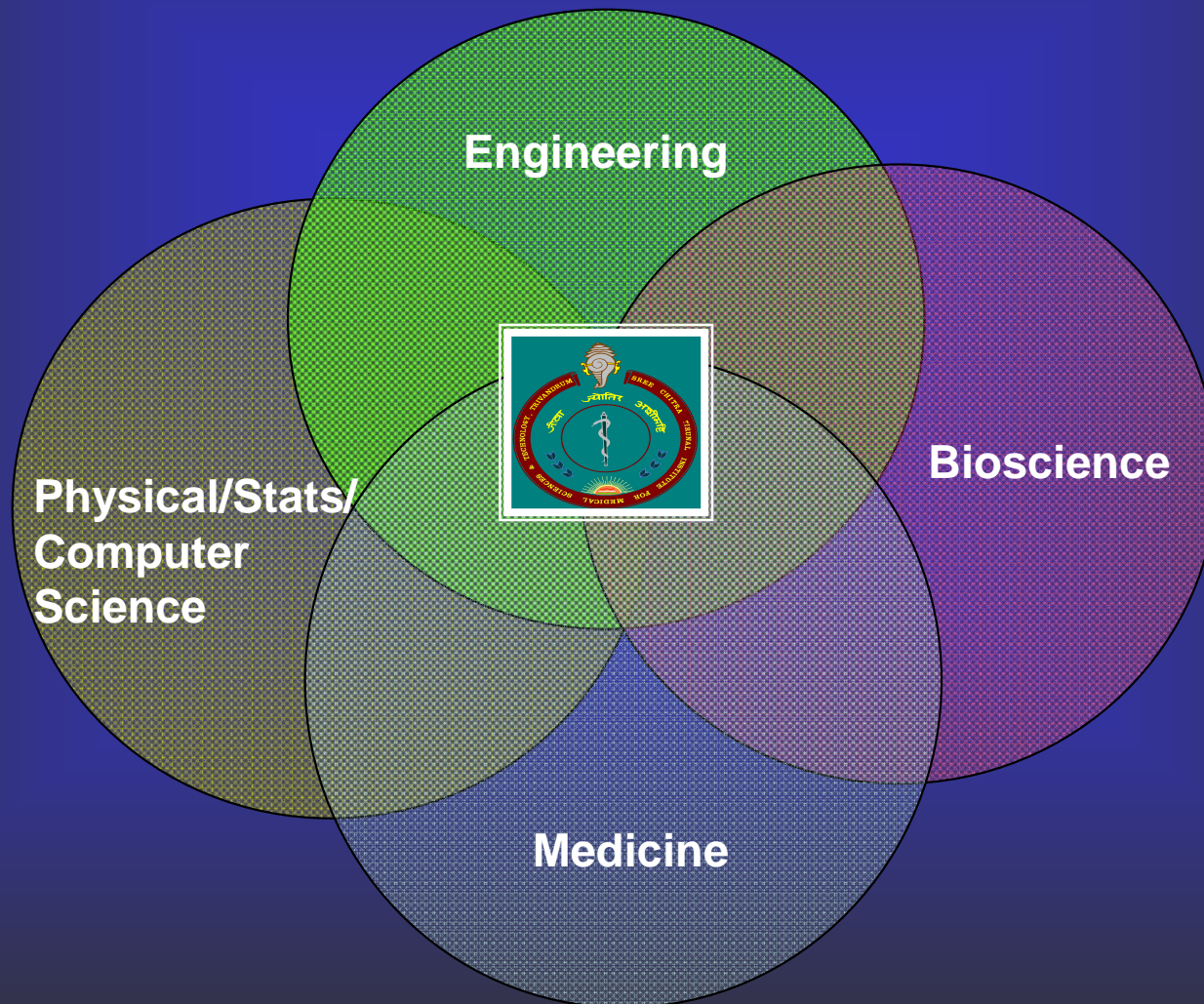
Biophotonics in Diagnosis and Therapy

Jayasree.R.S

Sree Chitra Tirunal Institute for medical Sciences and Technology
Trivandrum
India



We Emphasize Interdisciplinary Team Science





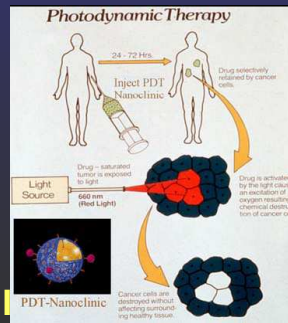
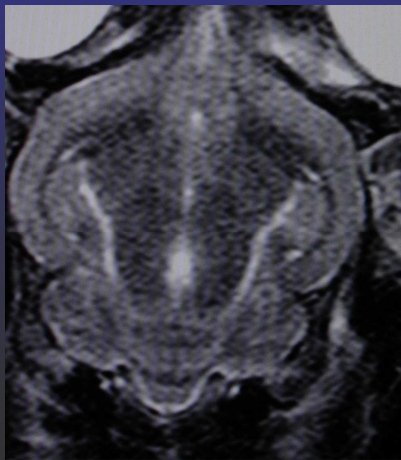
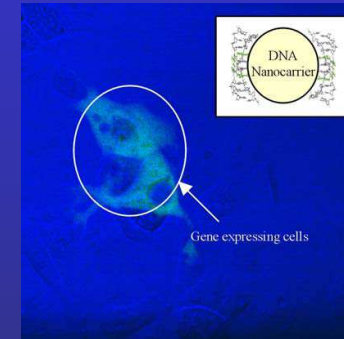
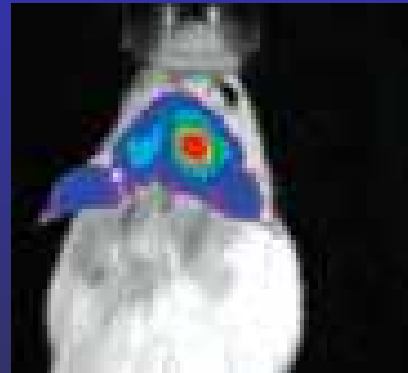
- **Molecular and Cellular Biophotonics**
- **Medical Biophotonics**



Molecular and Cellular Biophotonics

Develop and apply advanced optical diagnostic probes to important problems in molecular and cellular imaging

Nano biomaterials in Medicine

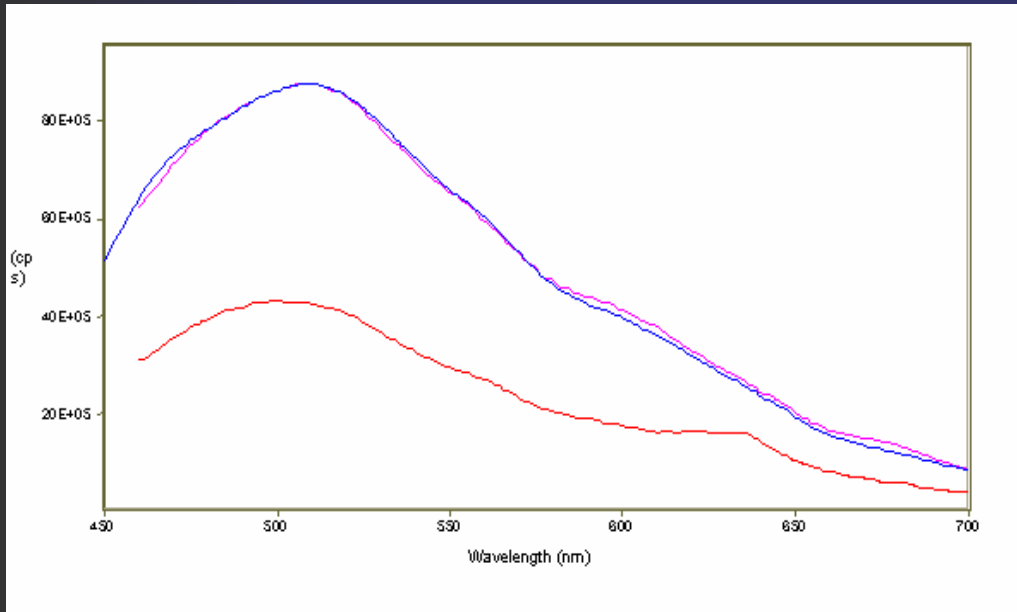




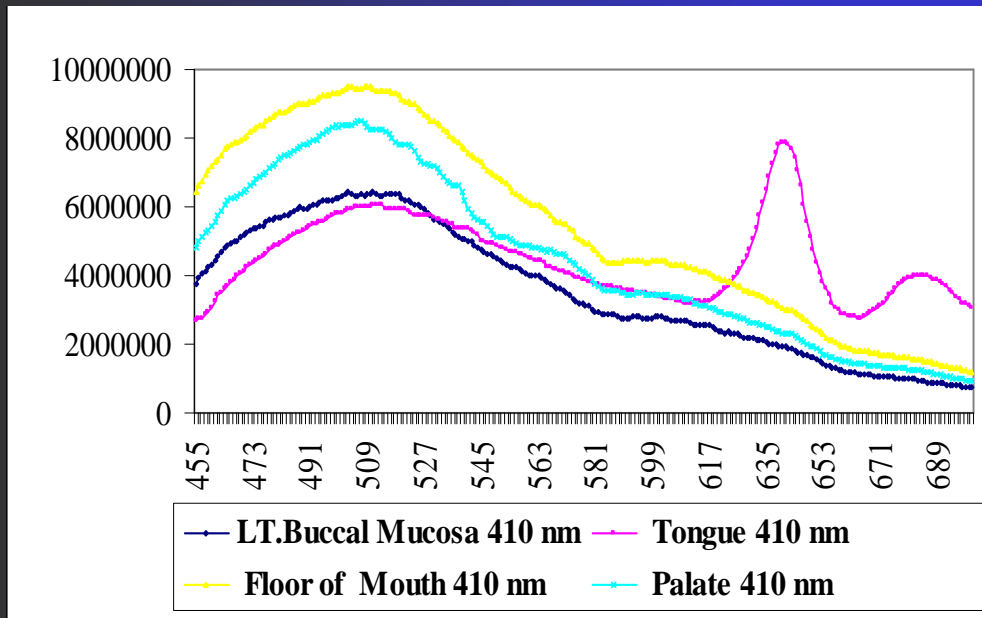
OUR EXPERIENCE



Steady state fluorescence spectra



I 480/ 630



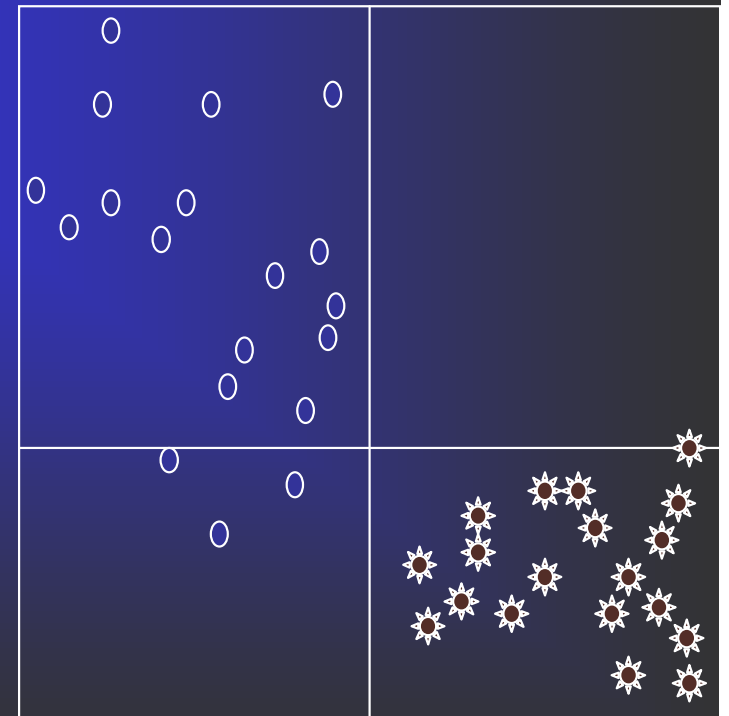
2.3

Normal

1.8

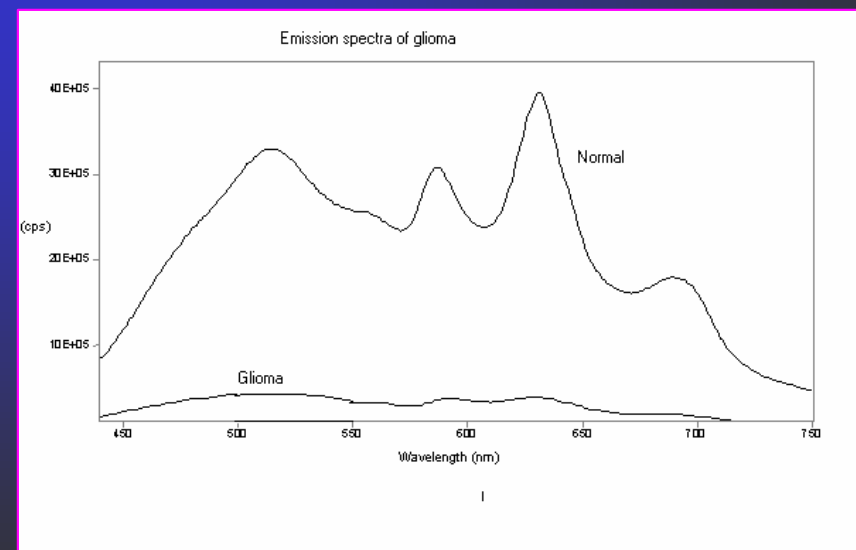
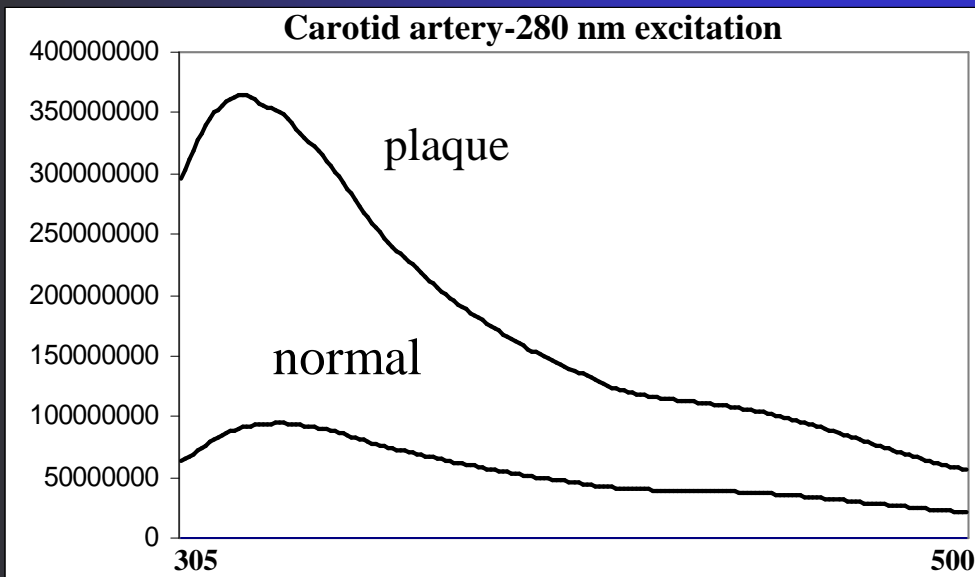
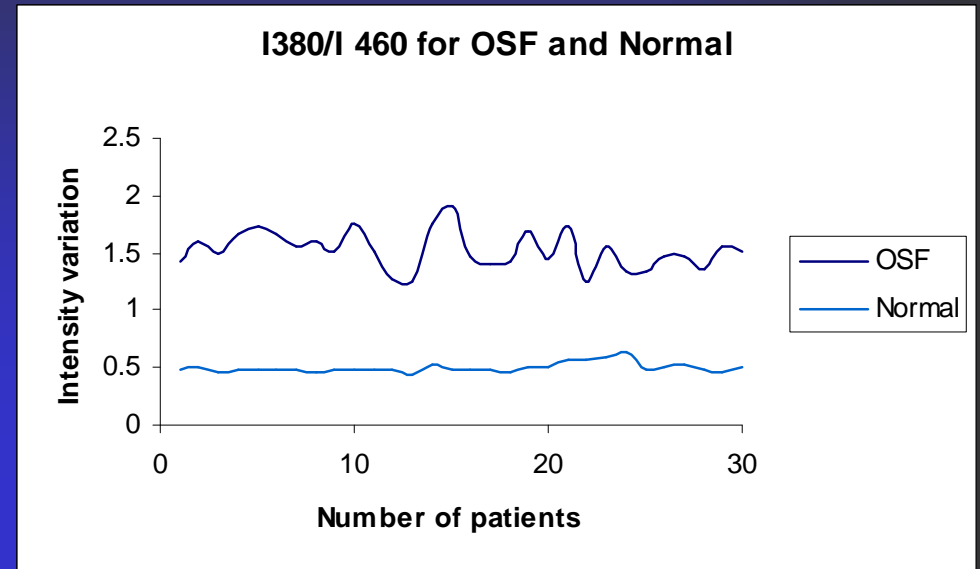
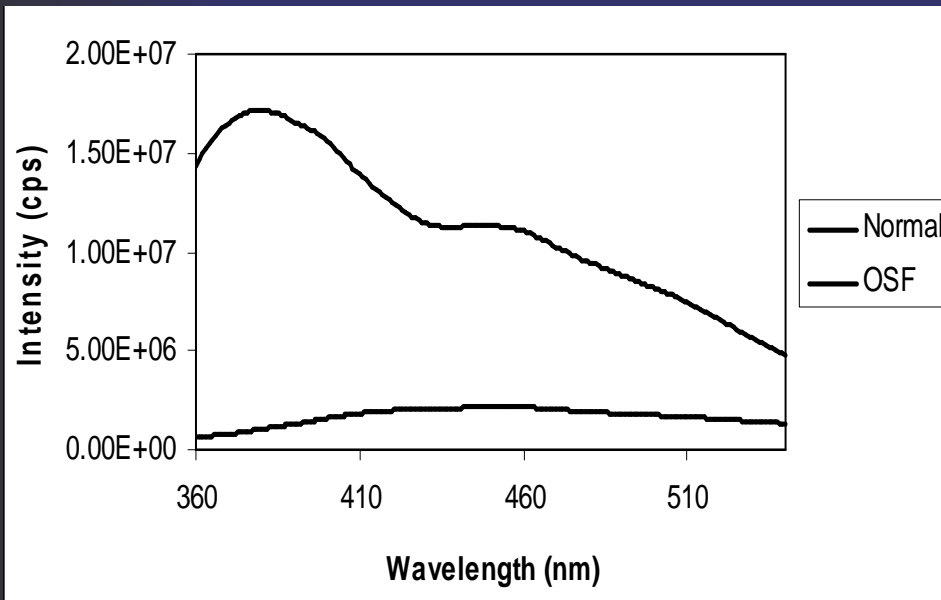
Leukoplakia

1.5





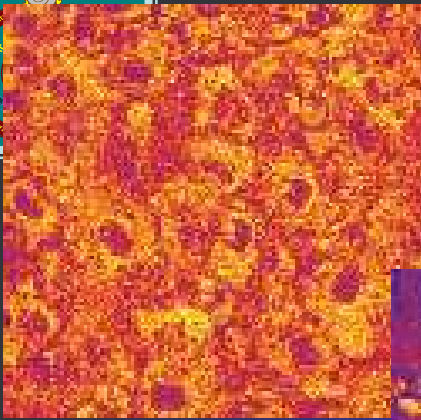
OSF & Normal Spectra



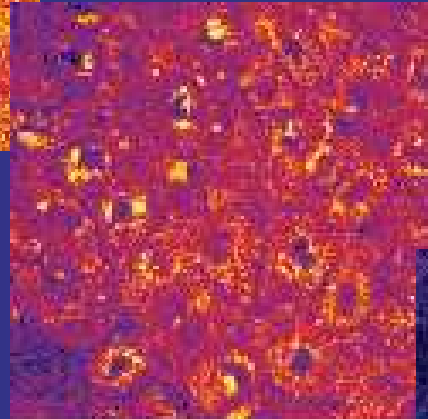


FLIM-Future Plan

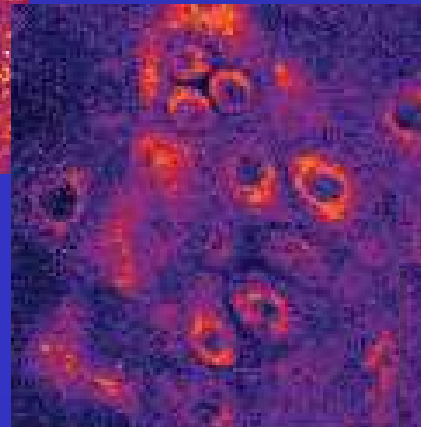
Normal



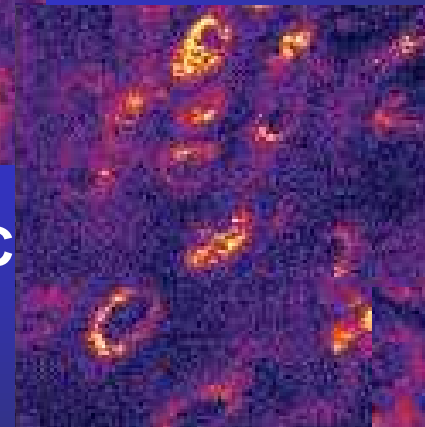
Moderate dysplasia



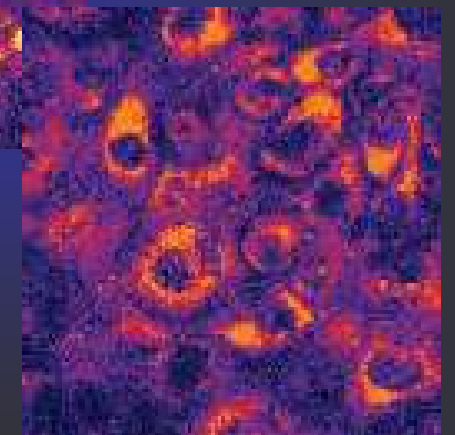
CIS



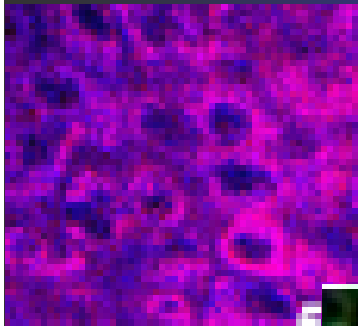
Nonpapillary SCC



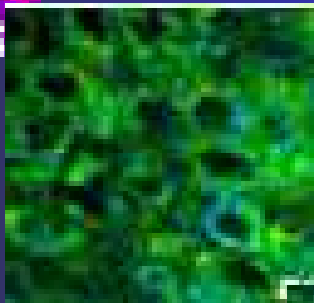
Papillary SCC



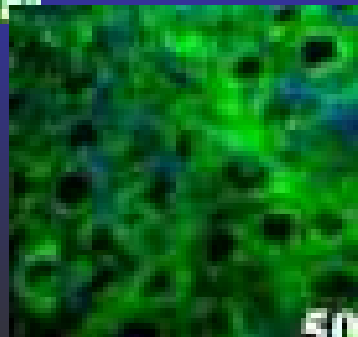
FAD/NADH



NADH



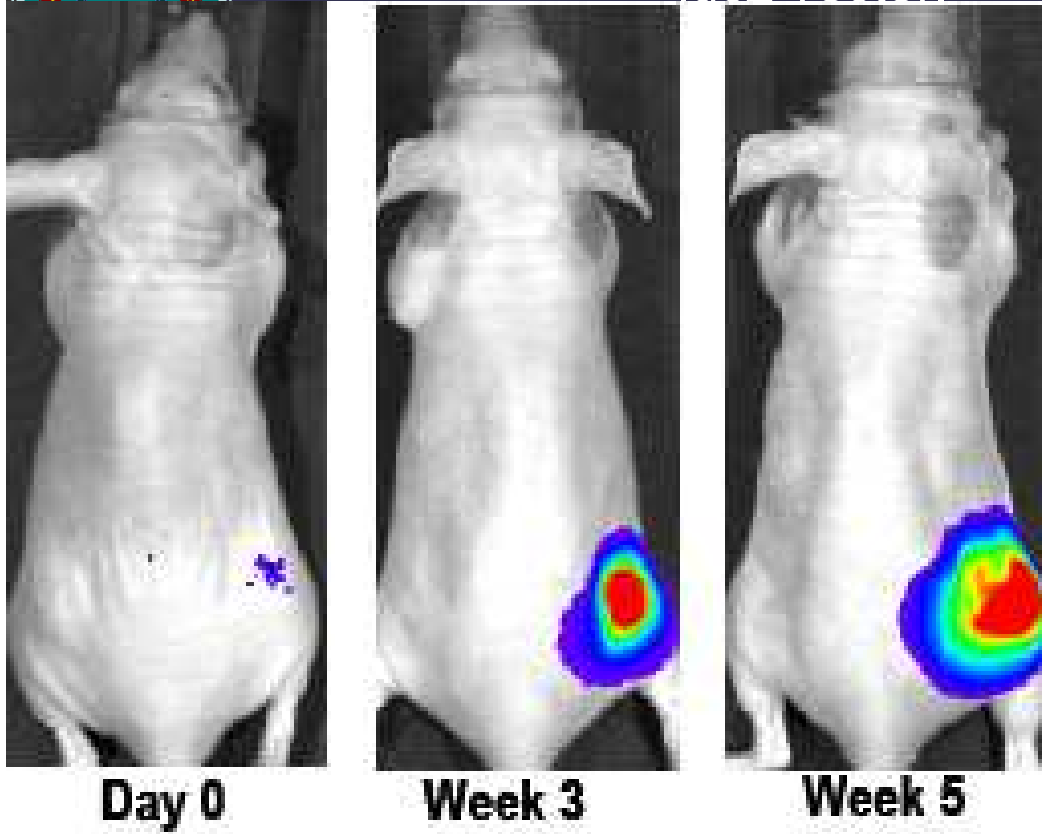
FAD



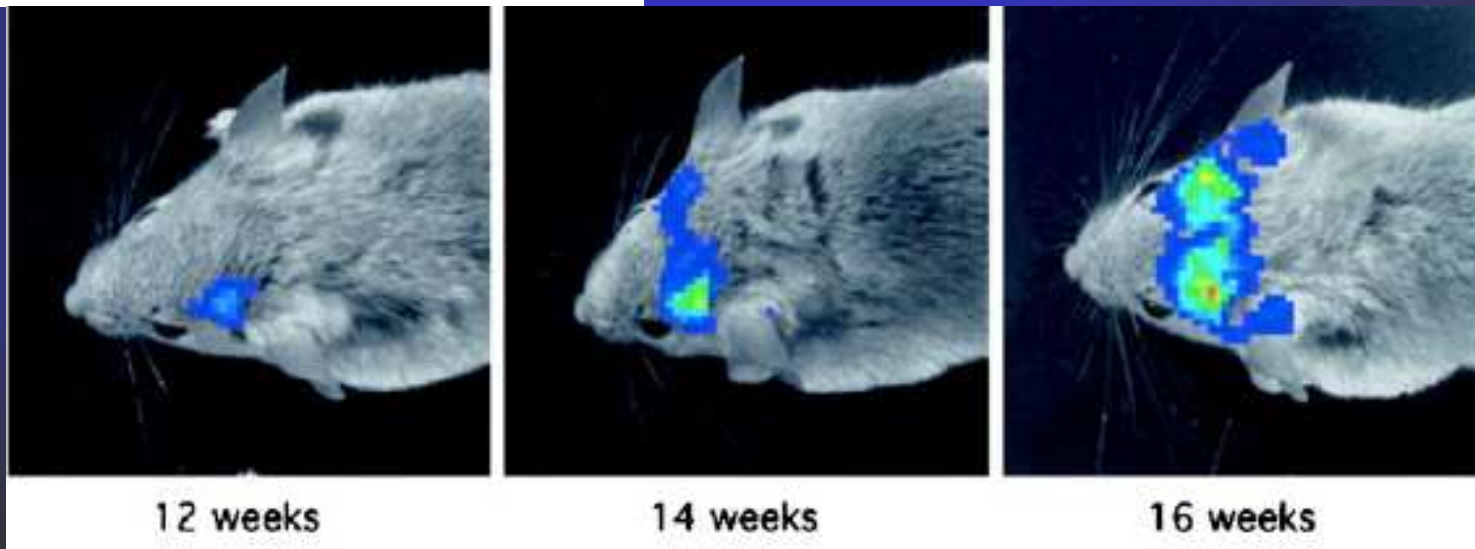
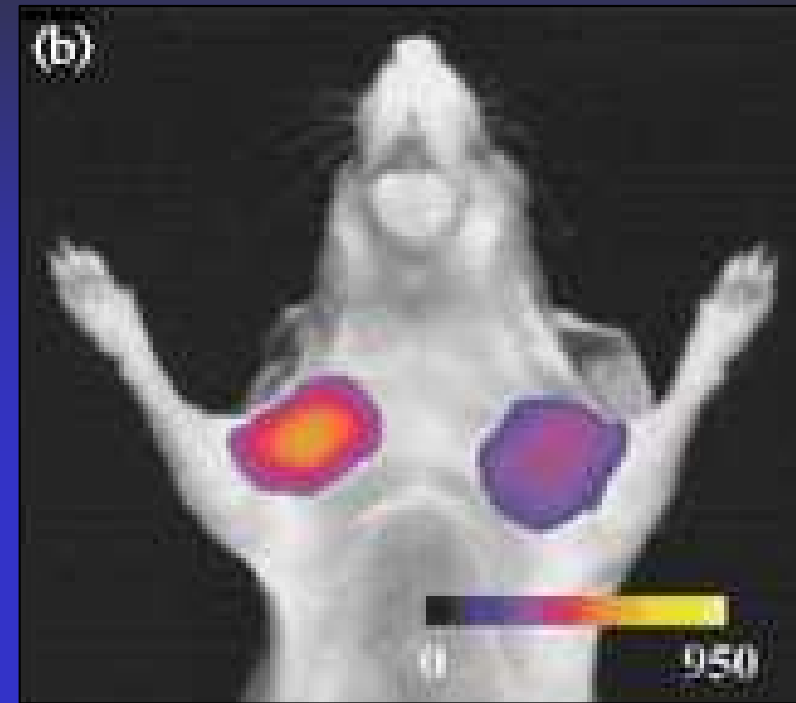


Tumor growth and micro metastasis

luc2 vector.

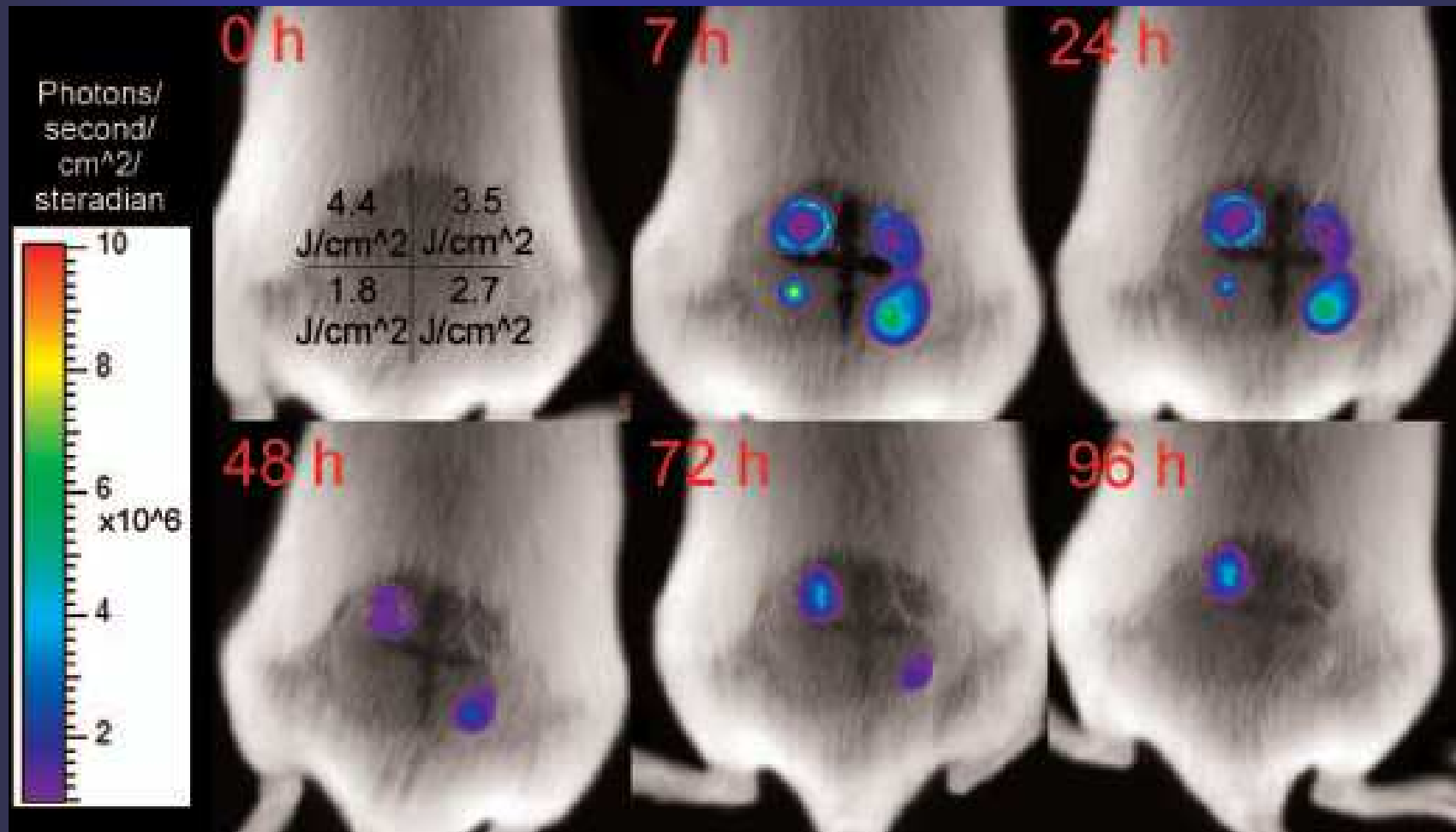


cathepsin-B activated fluorescence

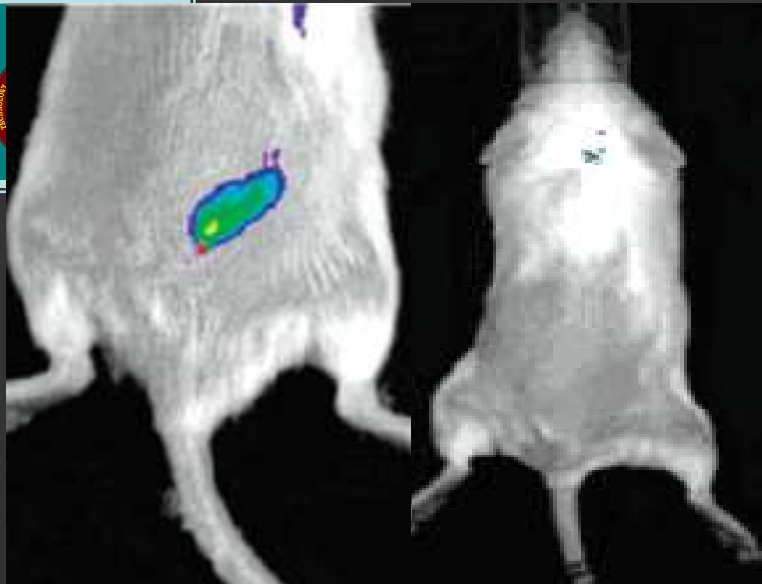




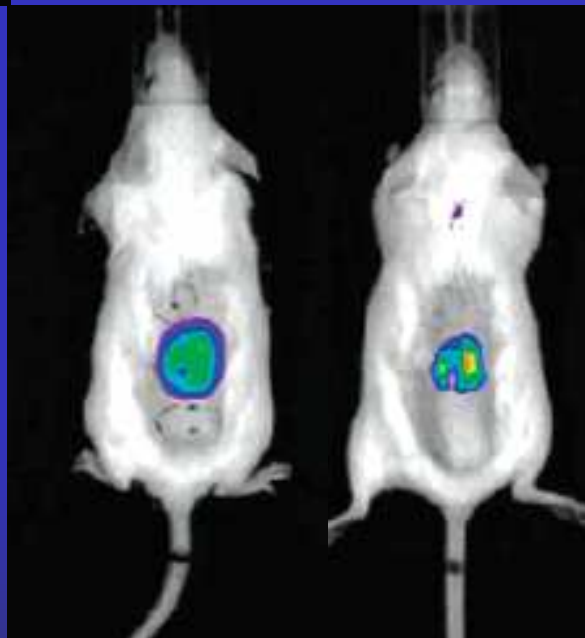
Heat shock protein induction analysis



QD (CdTe-PEG) Imaging on 1st and 7th day

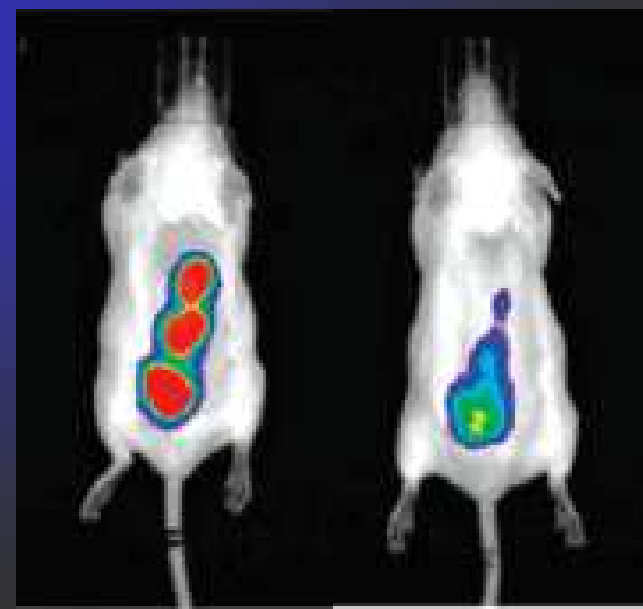


565



655

705





Medical Biophotonics

Translate photonics to clinical medicine for disease screening, diagnosis and therapy

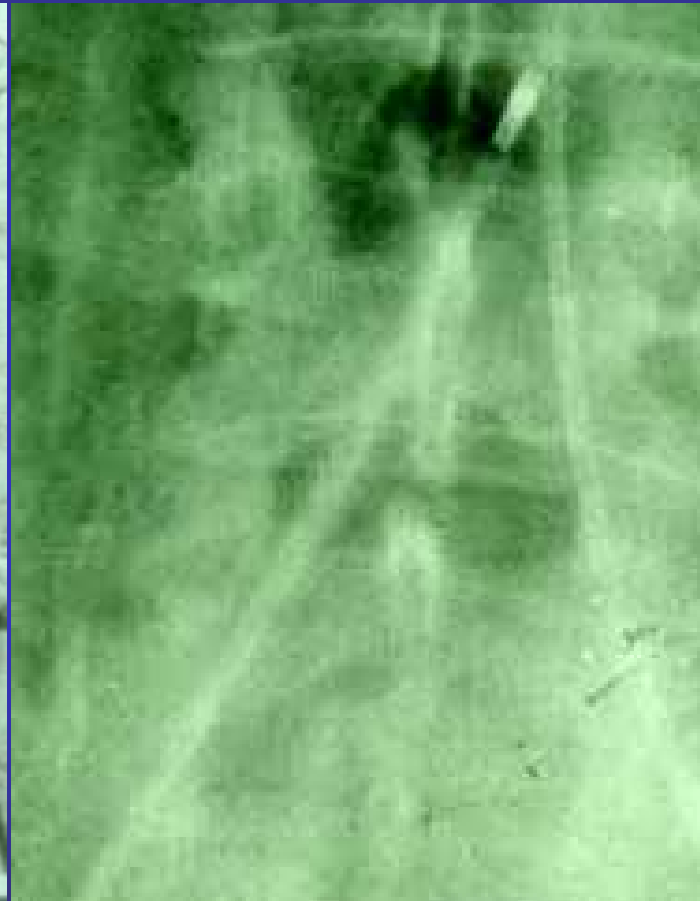
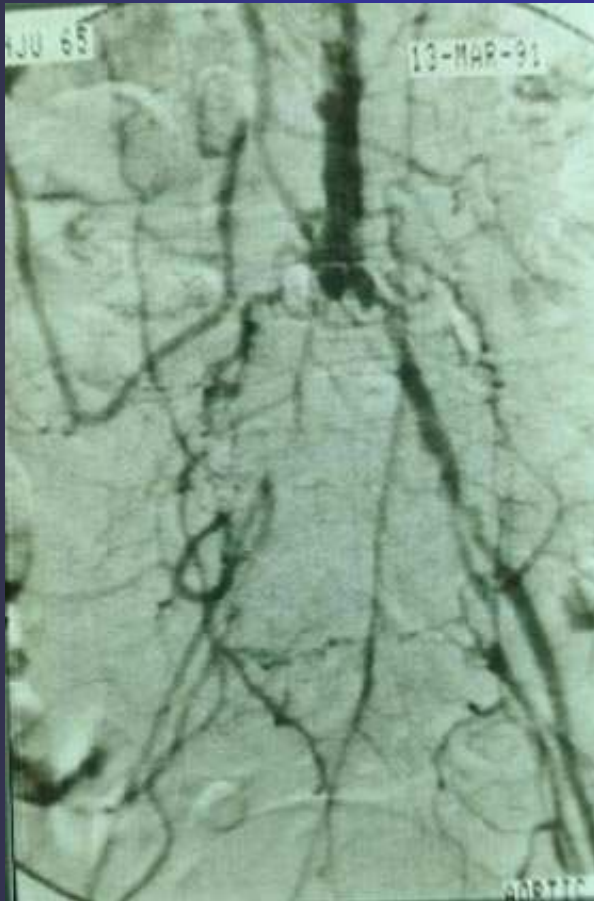


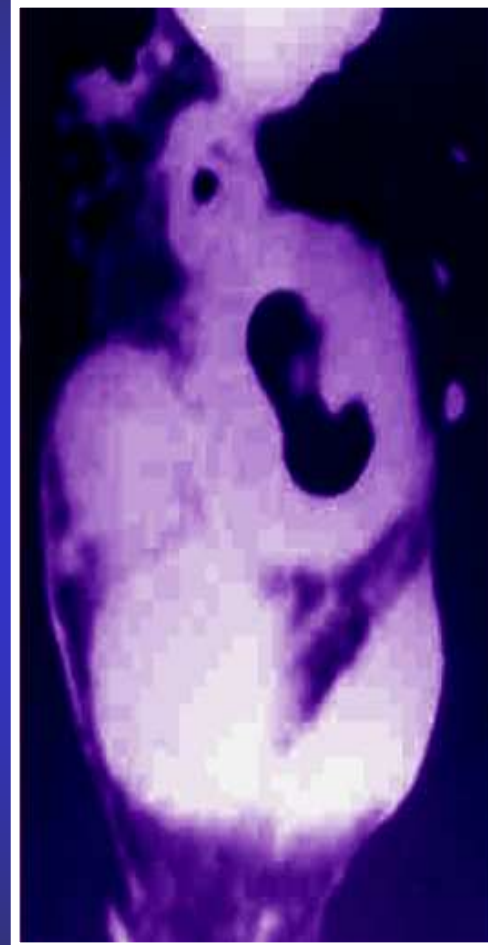
Laser assisted angioplasty

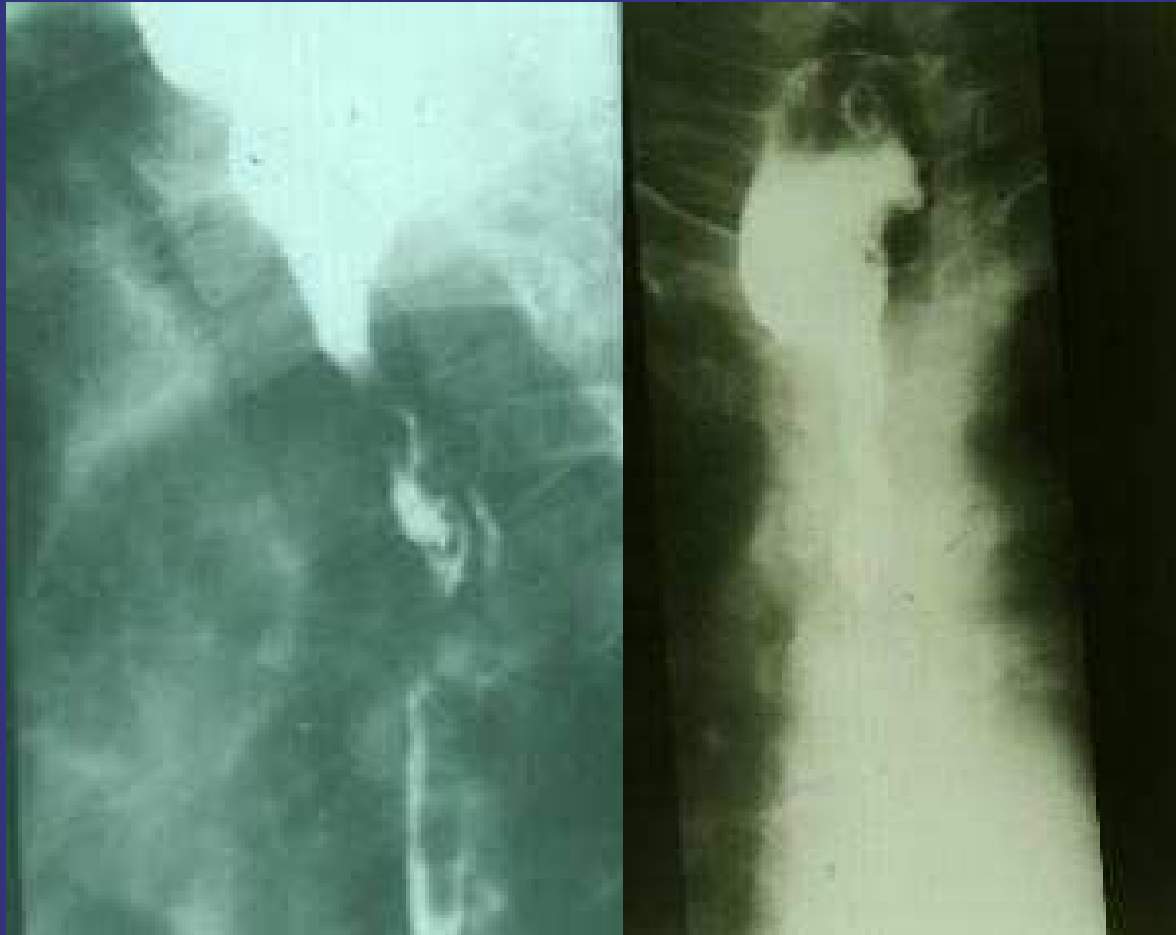




Laser assisted angioplasty



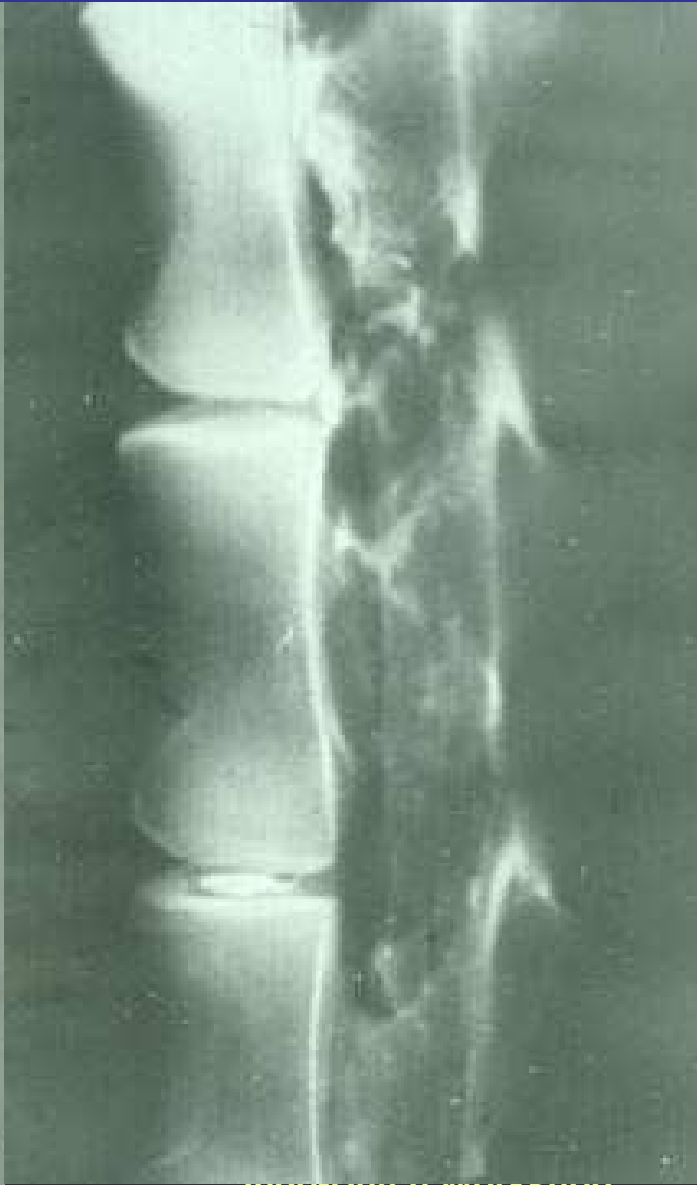


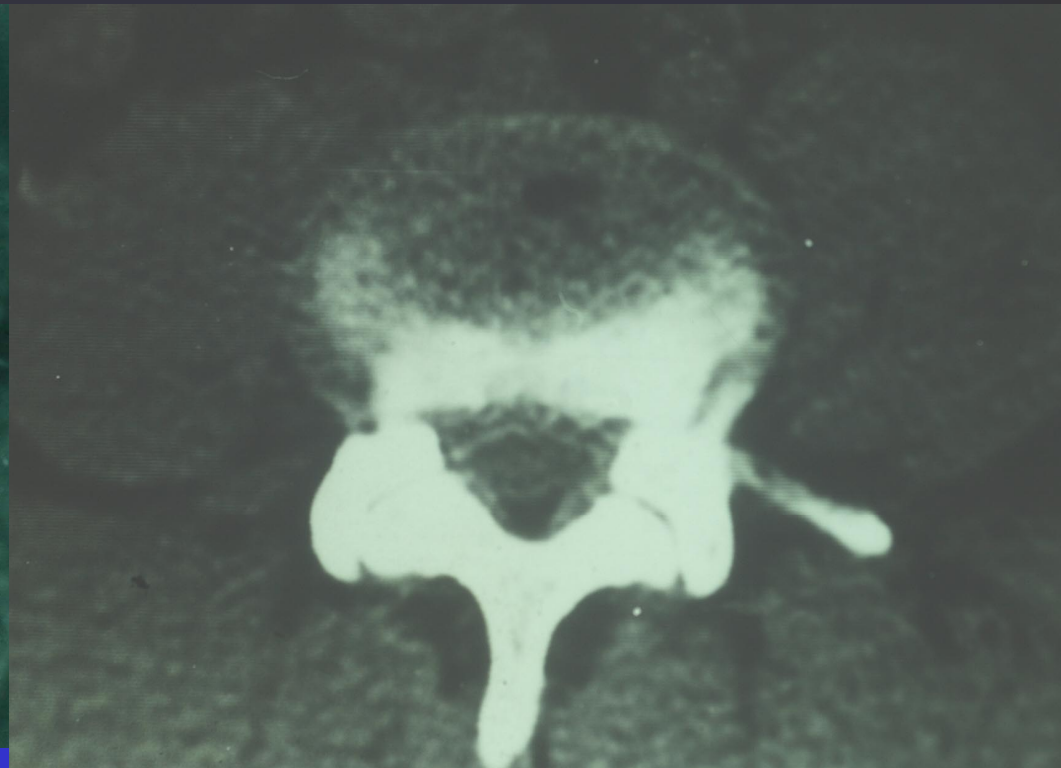
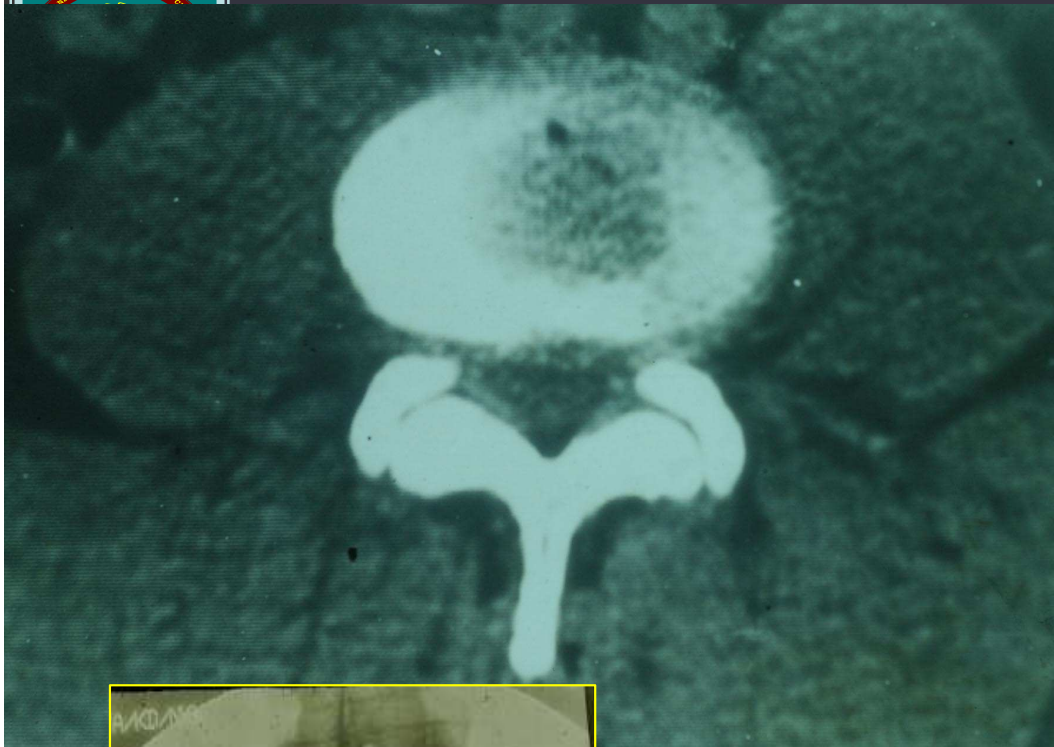






PLDD

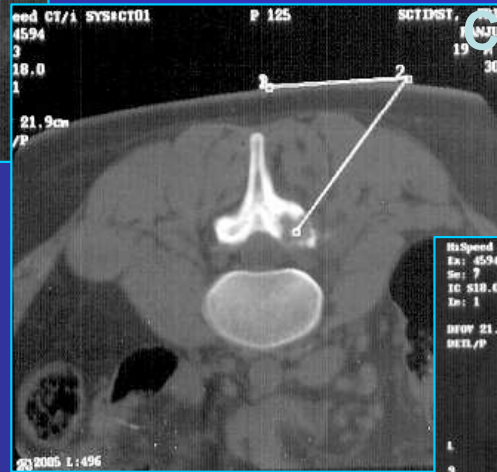






Osteoid Osteoma

Osteoid Osteoma L3 Right Lamina



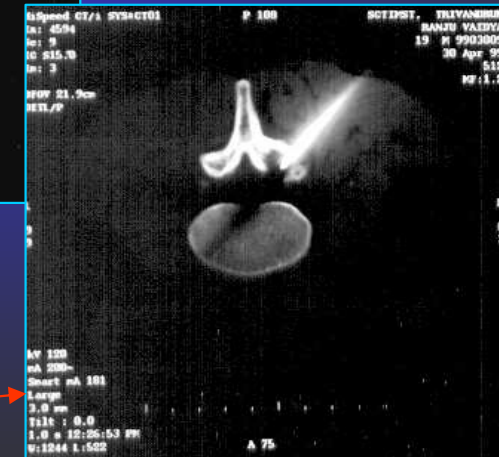
CT Co-ordinates



Needle approaching the lesion



Needle with in the nidus



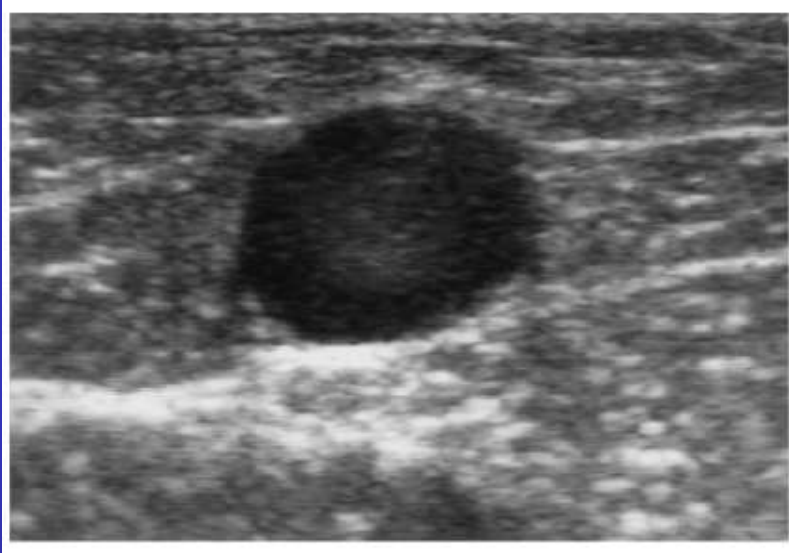


EVLT

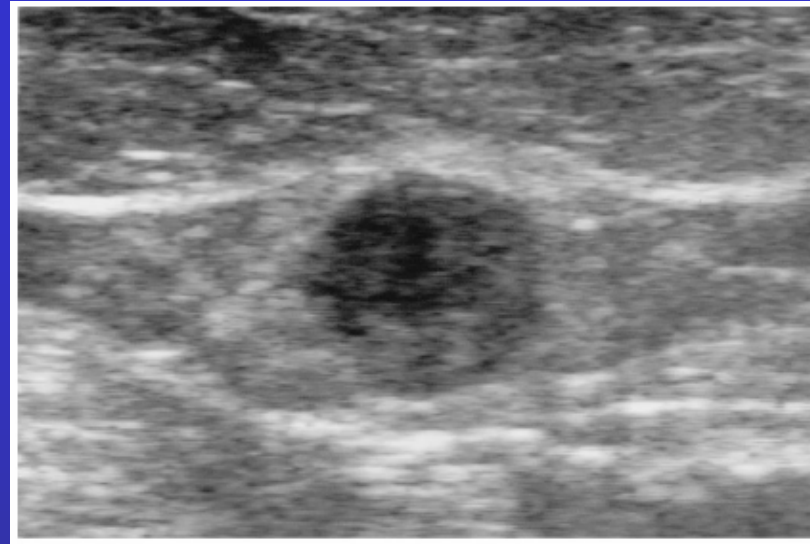




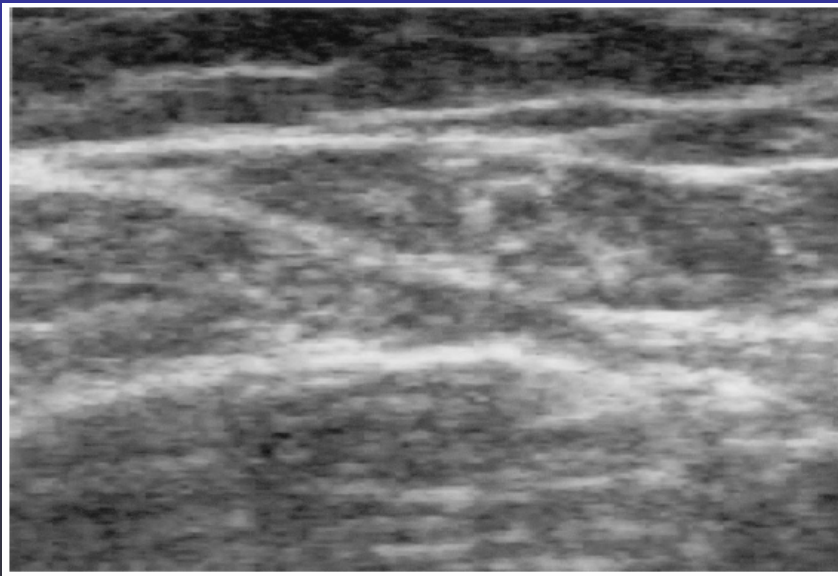
DOPPLER FINDINGS



BEFORE ABLATION



1 WEEK AFTER



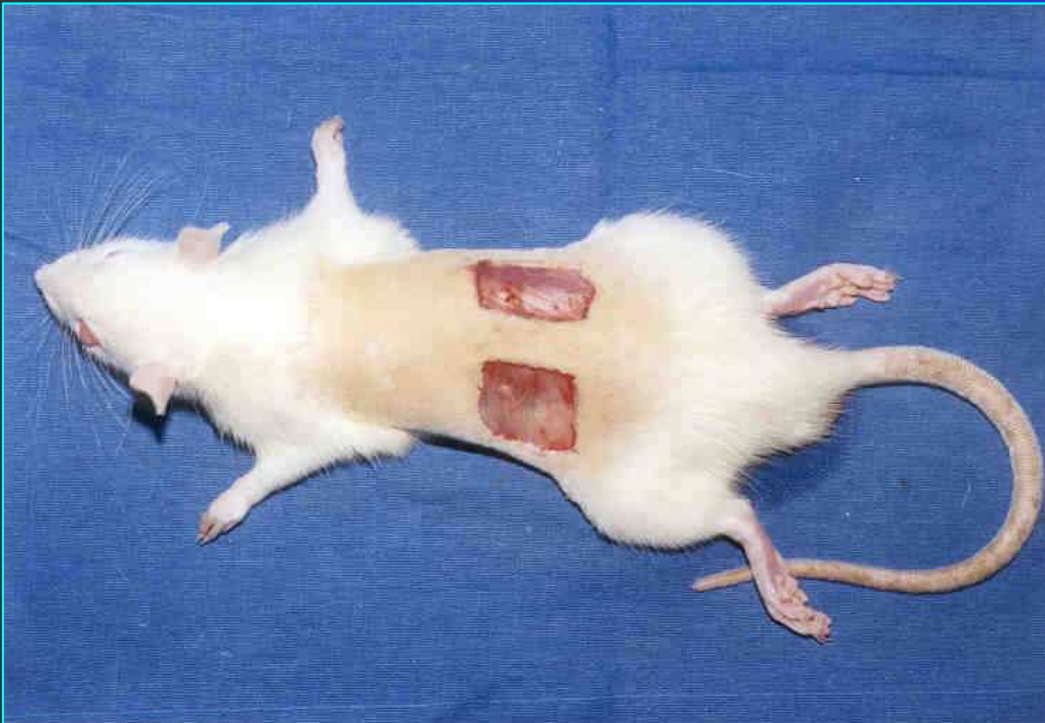
6 MONTHS LATER







Effect of PDT on the Wound healing





DLA induced animals on 40th day



EA induced animals on 40th day





Conclusion

- **Medical biophotonics**
 - Thrombolysis
 - LLLT
 - Fiber optic probe development for in vivo Fluorescence and Raman Imaging and spectroscopy
 - Vaccine Development
- **Molecular and cellular Biophotonics**
 - **Optical and MR probe development**
 - Cancer imaging
 - Imaging of atheromatous plaques
 - Neurodegenerative diseases
 - Therapy Monitoring including Radiation effects
 - Study radiation Effects
 - Stem cell tracking in therapy



Thank You