

5<sup>th</sup> International  
LUNG CANCER SEMINAR

Cultural Foundation of Tinos

16-18 September 2016



In collaboration with  
Greek Young Oncologists

In cooperation with:  
• Medical Association  
of Cyclades  
• Tinos Medical Center

# targeted agents & radiotherapy in locally advanced disease

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# conflict of interest

- I have no potential conflict of interest to report

# recent advances

- understanding of molecular biology of lung cancer



targeted therapies

- improvements in radiotherapy technologies



IMRT/IGRT

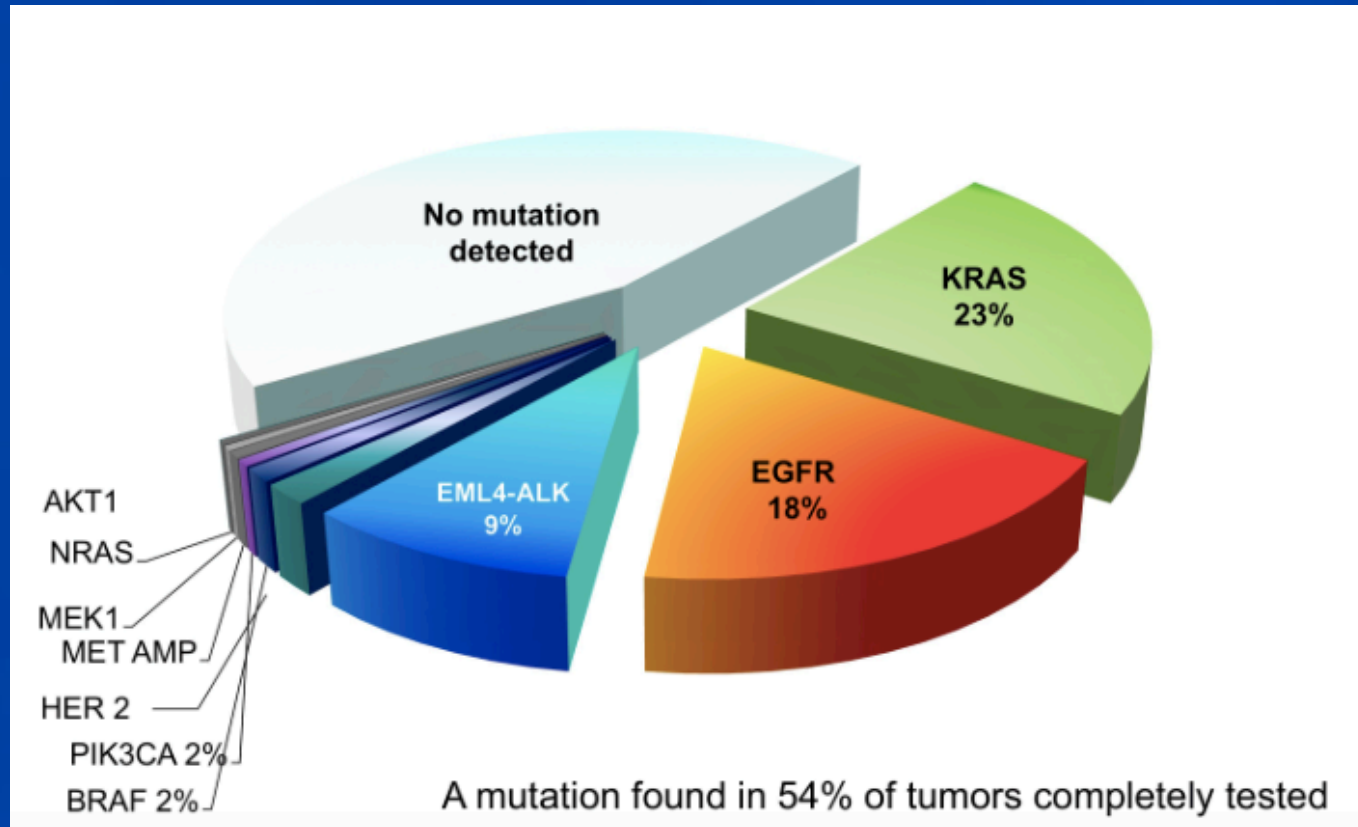
Stereotactic Ablative Radiation Therapy (SABR/SBRT)

# radiotherapy

## advanced technologies

- 4D conformal RT simulation
- Intensity modulated RT/volumetric modulated arc therapy (IMRT/VMAT)
- Image guided RT (IGRT)
- motion management strategies (respiratory gating)
- proton therapy

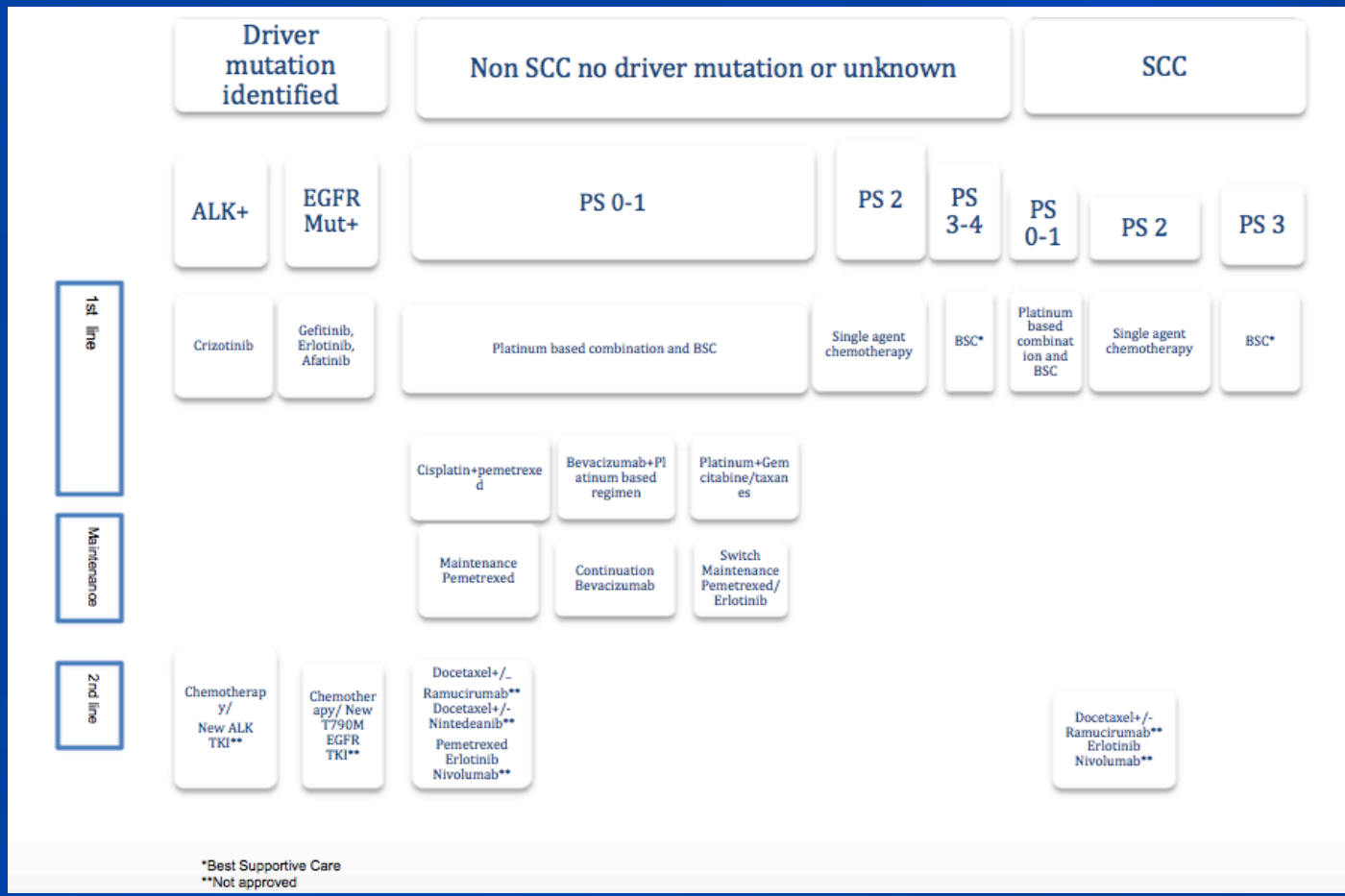
# lung cancer mutation consortium



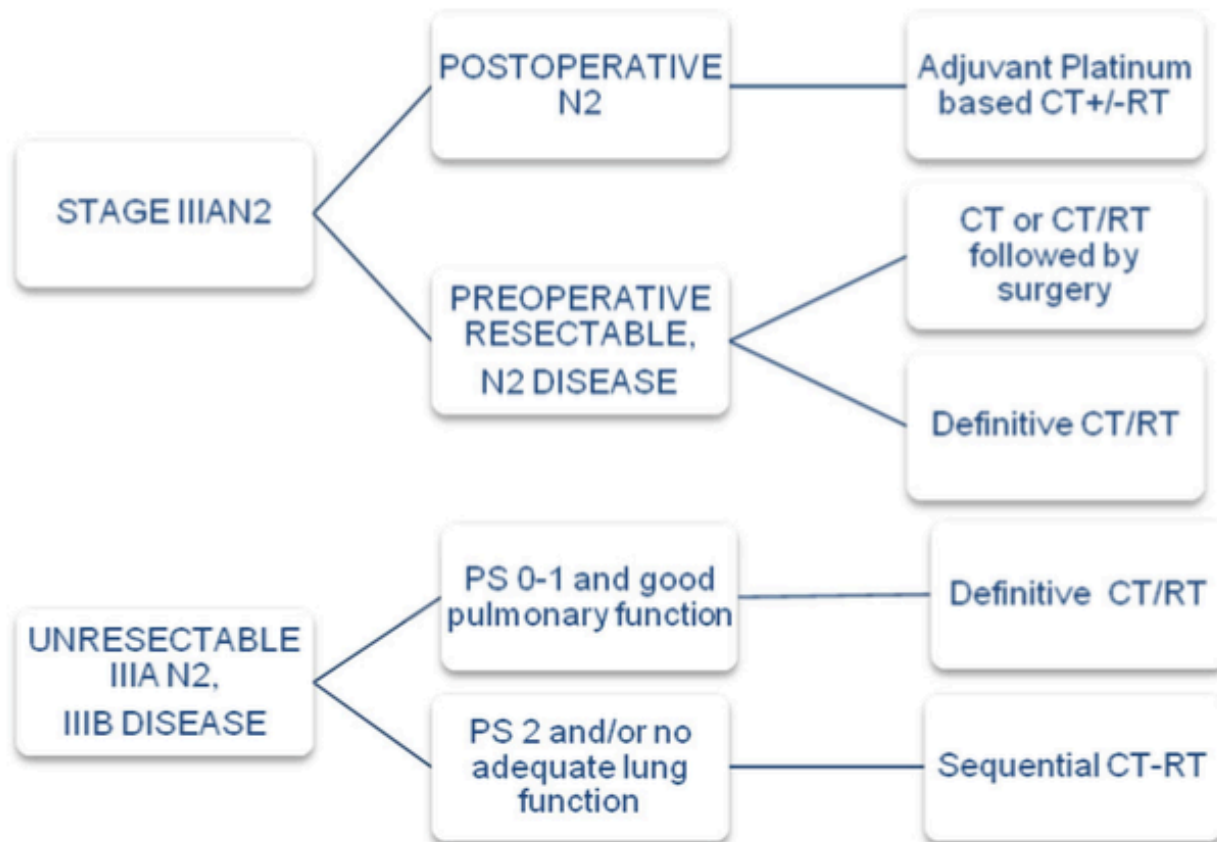
# targeted therapies

## targeted therapies

- ✓ cell surface antigens
- ✓ intracellular signaling pathways
- ✓ direct tumor cell survival



\*Best Supportive Care  
\*\*Not approved





# targeted therapies & radiotherapy

- complex cellular mechanisms that increase the effect of RT in cancerous tissues and reduce the effect of RT in healthy tissues
  - ✓ inhibition of repopulation
  - ✓ inhibition of neovascularization
  - ✓ redistribution of cell cycle
  - ✓ alterations of intrinsic tumor radiosensitivity

targeted therapies

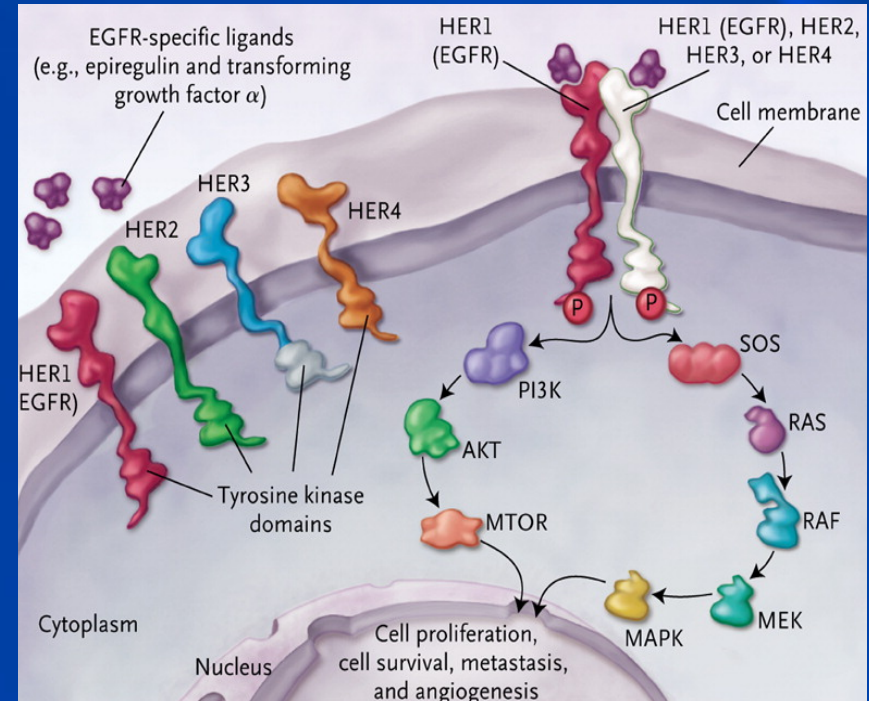
# targeted therapies in NSCLC

- epidermal growth factor receptor (EGFR) inhibitors
  - ✓ erlotinib
  - ✓ gefitinib
  - ✓ cetuximab
- angiogenesis inhibitors
  - ✓ bevacizumab
  - ✓ endostatin
- kinase (ALK) inhibitors

epidermal growth factor receptor (EGFR)

# EGFR

- extracellular domain
- transmembrane region
- cytoplasmic intracellular domain (contains TK activity)
  - ✓ cell proliferation
  - ✓ differentiation
  - ✓ migration, metastasis
- translocation to cell nucleus were activates trancription of genes
  - ✓ proteins with DNA repair



# EGFR

type III mutation (EGFRvIII) :

- ✓ deletion of extracellular domain
- ✓ main type of mutation in EGFR molecule (60%)

EGFR TK domain mutations

- ✓ 10 – 16% of cases

# EGFR

two strategies to inhibit EGFR

- **TK inhibitors (TKIs):** agents that bind to intracellular TK domain and inhibit TK activity
  - ✓ gefitinib
  - ✓ erlotinib
- **monoclonal antibodies:** bind to extracellular domain and inhibit ligand binding
  - ✓ cetuximab

