Pharmacogenomics Cases in Oncology

Clinical Applications of Pharmacogenetics:
Case Reports on the Practice of Personalized Medicine

Moderator: Michael Stocum

Unmet Needs in Oncology

Characteristics of current Treatment Regimens

- Treatment selection is population guideline driven, based on anatomical location and grading of tumor, stage of disease
- Combination therapy is the norm
- Highly toxic regimens with a variety of serious adverse events
- Response rates are frequently under 50% and can be as low as 10-15%
- Disease progression is rapid in several tumor types
- Newer, branded therapies command a premium price
- Complex administration of many medications

Examples of Targeted Therapeutics

- Herceptin (Her-2/neu)
- Gleevec (Abl, PDGFRβ, c-KIT)
- Iressa (EGFR)
- Tarceva (EGFR)
- Erbitux (EGFR)
- Sutent (PDGFRα, PDGFRβ, c-KIT, VEGFR1, VEGFR2, VEGFR3, FLT3, CSF-1R, RET)
- Sprycel (Abl, Src)
- Nexxavar PDGFR, c-KIT, VEGFR, FLT3)
- Ritixumab (anti-CD20)
- Rapamycin: (mTOR inhibition)

Conclusion: [Deeper understanding of] “biology makes obsolete the old definitions of markets based on clinical symptoms defined by body parts”

Source: Bernstein, Targeted ≠ Narrow, BioCentury 27-Feb-2006

Many Personalized Medicine Products & Opportunities Exist

- Pathology-based (Contextual, Morphological
- Histological (Immunohistochemistry)
- Cellular analysis (Flow Cytometry)
- DNA (gene amplification, deletion, SNPs by In Situ Hybridization and Sequencing)
- Genomics (DNA methylation, mRNA expression)
- Protein analysis (serum ELISAs)

Session Overview

8:15 - 10:00

Dennis O'Kane, PhD – Classical Pharmacogenetics
Mayo Clinic

Raju Kucherlapati, PhD – DNA/Genomics
Harvard Partners

10:15 – 12:00

Jim Herman, MD – DNA Methylation
Johns Hopkins

Ralph Snyderman, MD – Clinical Decision Support
Duke University/Proventys

Setting Expectations…

Audience participation!!

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