

Cancer and Inflammation

~~Novel Therapeutics~~ and Clinical Trial Development to Treat Cancer

State of the art not yet to the point where novel therapeutics can be rationally designed specifically to target inflammation

Cancer and Inflammation Novel Therapeutics and Clinical Trial Development to Treat Cancer

Much we can learn from creative,
well designed, rigorous, correlative
studies

Where should be put our efforts?

- Prospective correlative studies in humans with adequate and rigorous collection of samples.
- Correlation of tumor microenvironment with
 - Genetics
 - Stage of disease
 - Standard peripheral markers, cytokines, other factors
 - Functional assays if possible
 - Impact of microenvironment on therapeutic response
 - Effects of therapy on microenvironment
- Rigorous, well-designed smaller studies with extensive data and sample collection more valuable than larger, less comprehensive clinical trials of new treatment approaches

Rational clinical trial design to target inflammation will require progress in “Tumor Inflammomics”

- Standardize Tumor Microenvironment Pathological Nomenclature
 - Inflammoclassification
- Identification of key markers and polymorphisms
 - Inflammochip
- Understanding effects of inflammation on non-invasive imaging such as PET
 - Inflammoscan

Understanding biology, and development of novel drugs, are not aligned

- Pharma and biotech will not support needed clinical studies exploring mechanisms
- Need for innovative, correlative studies that are geared more towards understanding impact of inflammation on cancer therapy, and impact of cancer therapy on inflammation, than on development of novel agents
- Understand effects of current and experimental drugs on inflammation (many targets are on cells in non-malignant as well as malignant tumor cells)

Value of animal models in designing clinical direction

- Strengths
 - Understanding mechanisms
 - Target identification
- Challenges
 - Skepticism in Pharma and Venture Capital
 - Therapy optimization
 - Often we optimize model to fit therapy, as opposed to optimizing therapy to fit model
 - Lack of heterogeneity
 - Some of us have immune systems that are Balb/C while others are BL6
 - Other differences between animal models and human disease

Unanswered questions

- Can presence or absence (or type) of inflammation in cancer impact on selection of traditional cytotoxic therapy?
- Can inflammatory response serve as target for effective biologic therapy?
- Will better understanding of the effect of inflammation on response to vaccine and other approaches to biological therapy of cancer improve efficacy of these approaches to therapy?

Clinical correlative studies are needed
so we can better understand the
relationship between malignancy and
inflammation

Cause and effect

Location, location, location

Timing is everything