T Cell Immunotherapy – Optimizing Trial Design
Office of Biotechnology Activities
Office of Science Policy
National Institutes of Health (NIH)
Bethesda, MD
September 10-11, 2013

8:30 AM Welcome and Introductory Remarks

Co-Chairs: Donald Kohn, M.D., University of California, Los Angeles
           Hans-Peter Kiem, M.D., Ph.D. Fred Hutchinson Cancer Research Center

Session I: Current Status of Cancer Immunotherapy:
Trials, Results, and Challenges

8:40 AM Update on Current Approaches and Trials
Slide Presentations:

**Introductory Briefing** - Donald Kohn, M.D.

- **Renier Brentjens, M.D., Ph.D.**
  Memorial Sloan-Kettering Cancer Center

- **Laurence Cooper, M.D., Ph.D.**
  MD Anderson Cancer Center

- **Antoni Ribas, M.D., Ph.D.**
  University of California, Los Angeles

- **Helen Heslop, M.D.**
  Baylor College of Medicine

- **Stephen Gottschalk, M.D.**
  Baylor College of Medicine

- **Philip Greenberg, M.D.**
  Fred Hutchinson Cancer Research Center

- **Brian Till, M.D.**
  Fred Hutchinson Cancer Research Center

- **Michael Jensen, M.D.**
  University of Washington

- **Stephen Forman, M.D.**
  City of Hope

- **Carl June, M.D.**
  University of Pennsylvania

- **Daniel Powell, Ph.D.**
  University of Pennsylvania

- **Richard Junghans, M.D., Ph.D.**
  Roger Williams Medical Center

- **Crystal Mackall, M.D.**
  National Cancer Institute (NCI), NIH

- **Steven Rosenberg, M.D., Ph.D.**
  NCI, NIH
Session II: Review of Strategies to Promote the Persistence of Cells

11:20 AM  BREAK

11:30 AM  Host Preparation
  Steven Rosenberg, M.D., Ph.D. – Slide Presentation

Discussion Session

1. What lymphodepletion agents are being used?
2. Are there data to compare across protocols?
3. Is it always needed?

12:15 PM  LUNCH (On Your Own)

1:15 PM  Design of Chimeric Antigen Receptors
  Michel Sadelain, M.D., Ph.D. – Slide Presentation
  Memorial Sloan-Kettering Cancer Center

Design of T Cell Receptors
  Antoni Ribas, M.D., Ph.D. – Slide Presentation

1:45 PM  Discussion Session

1. What data do we have comparing co-stimulatory domains in second and third generation CARS?
2. Cytokine support – What is the optimum approach?
3. How can combinatorial design be used to test relative efficacy and avoid antigen escape?

2:30 PM  Product Related Factors:

Gene Delivery Considerations
  Laurence Cooper, M.D., Ph.D. – Slide Presentation

Optimizing the T Cell Product
  Michael Jensen, M.D. – Slide Presentation

Potential Use of Stem Cells
  David Baltimore, Ph.D. – Slide Presentation
  California Institute of Technology
3:15 PM  Discussion Session

1. How much variation is there across protocols in active product?
2. Is there an optimal protocol for T cell expansion?
3. Does the mix of T cells make a difference – CD4/CD8 vs. T central memory cells etc?
4. What approaches might use human stem cells as a target?
5. For integrating vectors, do we have data comparing lentiviral vectors, murine retroviral vectors, transposons regarding transduction efficiency?

3:45 PM  BREAK

Session III: Dilemmas and Challenges: Approaches and Assessments

4:00 PM  Target Selection

Steven Rosenberg, M.D., Ph.D. – Slide Presentation
Carl June, M.D. – Slide Presentation

1. What type of screening needs to be done for new target antigens?
2. Are murine models valuable/necessary?
3. Are large animal models needed for novel targets?

4:45 PM  Dosing Strategies – Goals and Options

Renier Brentjens, M.D., Ph.D. – Slide Presentation

1. Starting doses is there a usual range?
2. Single versus Split – How is it being done and do we have data on whether this improves safety?
3. Dose escalation – single subject cohorts versus traditional 3 subject cohorts.

5:30 PM  Adjourn
Day 2 – Wednesday, September 11, 2013

Session IV: Scientific and Commercial Challenges

8:15 AM Opening Remarks
Summary of Sessions I – III - Donald Kohn, M.D.

8:30 AM Managing the Unexpected – SIRS and other Adverse Reactions
OBA Summary Data on SAEs - Hans-Peter Kiem, M.D., Ph.D.

Discussion Session

1. What cytokine measurements are helpful and what have we learned?
2. What is the role of steroids, and IL-6 antagonists?
3. Pre-screening of subjects, what chronic conditions should be excluded from early trials and how is screening done?

9:30 AM Suicide Genes - Potential Role in Avoiding Acute and Long-term Toxicities
Helen Heslop, M.D. – Slide Presentation
Baylor College of Medicine

9:45 AM BREAK

10:00 AM Moving the Field Forward to Licensed Products for Commercialization

1. What are the key scientific questions to be addressed?
2. Strategies to enhance communication, data sharing and management
3. Resource needs and sources
4. Path to licensing – will it be different than for other therapies?
5. Are there alternative models for early trials to facilitate rapid testing of new targets?
6. What are the key issues to prepare for commercialization of these products?

12:00 PM Final Comments

12:15 PM Adjourn