MedImmune – Catalyst Partnership: Therapeutic Areas of interest to MedImmune

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**Oncology Biology**
- **Immune-mediated therapies**
  - Enhancing immune response
  - Overcoming immune suppression, e.g., checkpoints
- **Tumor-associated antigens**
  - Armed antibody approaches (ADCs, immunocytokines, CAR-T)
  - New TAA targets
- **Cancer stem cell biology**
  - New CSC targets
  - Techniques and markers for identifying, isolating and tracking CSCs
- **Oncolytic viruses**
  - New oncolytic virus approaches and biology
  - New transgenes and combinations
- **Engineered cellular therapies**
  - New approaches and targets for adoptive T-cell therapy

**Oncology Translational Sciences**
- Immunoprofiling of tumors
- Predictive biomarker discovery
- Drug combination studies
- Resistance modeling and mechanisms

**Reversing fibrosis**
- Reversing cellular senescence
- Therapeutic approaches to treating fibrotic disease
- Lung elasticity in fibrotic disease

**Granulocytes in human diseases**
- Citrullination biology
- Eosinophil biology
- Neutrophils in lupus

**Regenerative medicine**
- Induction of in vivo b-cell differentiation
- Oligodendrocyte precursor differentiation
- Heart regeneration and repair

**Medical microbiome**
- Therapeutic applications of microbiome
- Microbiome immune system interactions
Metabolic Diseases
• Novel approaches to treat insulin resistance
• Understanding molecular mechanism of hypertrophic obesity
• Mechanisms promoting beigeing of the adipose tissue
• Novel pathways regulating appetite
• Modulating gut microbiota as a potential therapy
• Mechanistic insight for diabetes resolution following gastrointestinal surgery
• Approaches to increase functional pancreatic β-cell mass
• Novel insights into the pathophysiology and treatment of diabetic nephropathy and chronic kidney disease and nonalcoholic steatohepatitis (NASH)

Cardiovascular Diseases
• Understanding causes for endothelial dysfunction post myocardial infarction
• Transplantation of stem and progenitor cells for the treatment of myocardial infarction
Translational Sciences

• Pharmacodynamic variability of response to therapeutic intervention usually exceeds pharmacokinetic variability
  • Is appropriate patient selection by predictive biomarkers of therapeutic response more influential on optimization of therapy than individualization of dose by therapeutic drug monitoring?
  • This question will be focused on biologic therapeutics with emphasis on respiratory and autoimmune diseases. Data from clinical trials will be made available to the investigators depending on the scope of the project.

• Specific questions include PKPD for selection of the optimal therapeutic dose and predictive biomarkers for selection of the appropriate patient population
• Quantitative modeling approaches will be applied to maximize the probability of individual response and minimize the inter-subject variability in PK and efficacy
• Methodology for analysis of sparse data sets in late stage clinical development will be assessed
• Optimization of late stage clinical trial designs to select optimal dose and the right patient population will be evaluated