THE LEADING CANCER IMMUNOTHERAPY AND TUMOR IMMUNOLOGY CONFERENCE

The Society For Immunotherapy of Cancer’s 36th Annual Meeting & Pre-Conference Programs #SITC21
Grant Opportunities: What Grant Type Shall I Apply For?

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Disclosures

There are no disclosures relevant to the presentation

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Funding of Cancer Immuno-Oncology Research

- Federal (NCI, DOD, SBA, VA, CDC, EPA ...)
- State Agencies
- Biotech
- Philanthropy
- Institutional
- Big Pharma
Main Sources of Cancer Research Funds*

- **NCI**: ~ 6B (2019); the largest pool of cancer research dollars in the US
- **CDMRP (DOD)**: 312M (2017) breast: 120M; prostate: 90M; ovarian: 20M; lung: 12M; kidney: 10M; other: 60M
- **Other federal**: SBA (SBIR/STTR), CDC, VA, EPA, DOE, NASA, NSF, Commerce and USDA.
- **State**: Texas, California, NYS, many other states
- **HHMI**: ~ 220M (2016; ~1/3 of $655 spent on medical research is cancer relevant)
- **ACS**: 152M (2016)
- **AACR**: 38M (2016)
- **Other NGO/Philanthropy** (S. Komen, V Foundation,....)
- **Pharma and Biotech**: Billions. ~40% of Pharma R&D is cancer related and ~80% of cancer R&D is currently dedicated to I-O efforts

*In the US; estimates based on the web sites of the relevant organizations
Which Grants to Apply for: Factors to Consider

• Character and topic and of the project
  • Basic science - Translational - Clinical
  • Disease type(s)
• Project duration and budget needed
  • Total amount, and annual needs over time
  • Limits on indirect costs
• Clinical trial included?
• Animal experiments included?
• Eligibility (citizenship/visa status; training/faculty status, clinical privileges)
• Implications for promotion and tenure decisions
• Ability to include (and motivate) co/multi-PIs and co-Is
NIH/NCI Grants: Considerations (A)

• Largest overall budget and variable funding mechanisms/grant types:
  • Individual research grants (R01, R21,...) and team science program grants (P01, SPORE,..)
  • Training and career development grants (T32, F32, F31, F30, K01, K99/R00)
  • Contracts/platform development (U01, U24)
• Highly conductive to team science and clinical research: Program Project grants (P01, SPORE, U01, U24) and multi-PI R01s
• Specific FOA/RFA/PA/PAS/RFPs and open (unsolicited) grant proposals
• Large size and renewable character of many types of NIH grants
• Rigorous review process focused on scientific peer review and impact score
  • Focused review panels/study sections (areas of biology, basic, translational, clinical)
  • Stable review panels with known participants facilitate revision process
NIH/NCI Grants: Considerations (B)

- Funding stability and significant potential for funding multiplication
  - Possible grant renewals and upgrades (such as R21 to R01)
  - Available supplemental funds for multiple mechanisms
  - Matching funds from some states
  - Importance for CCSG funding of NIH cancer centers
- Highly desirable from institutional standpoint (rigor, prestige, stability)
- Awarded to host institutions, but relatively easy to transfer when PI moves
- *High leverage* for the PI & impact on promotions and tenure
- No citizenship restrictions (with exception of training grants)
- *Highly competitive*
CDMRP/DOD Grants: Considerations

- Defined disease area-specific budgets
- Significant role of programmatic review (initial and final): No pay line
- Scientific review process combines peer review and patient advocate review
- Ad-hoc review panels (anonymous to applicants)
- Some grants favor scientific partnerships and mentoring relations
- Some grants have restrictions on clinical trials and animal research
- Strict timelines and significant reporting responsibilities
Foundations/Philanthropy: Considerations

- *Multiple* opportunities, tailored to different cancers and types of research
- Focus on the applicant (and often mentor) rather than research proposal
- Focus on career-boosting potential of the project or research stability of uniquely qualified researchers (such as HHMI)
- Strong letters of support are key
- Often require institutional selection/nomination
- Some foundations may fund only local research (city, region)
- Potential limitations to career stage of applicants and # previous awards
- Often limits on animal and clinical research
Pharma and Biotech Funding: Considerations

- Dominant source of funding of I-O clinical trials which test
  - Combinations of approved drugs
  - Experimental and approved drugs
  - New indications for approved drugs

- Significant source of funding for trial-related correlative studies associated

- Source of funding of laboratory studies involving approved and experimental drugs (identification of new mechanisms, prioritization of disease targets and potential combinations for prospective trials)

- Can enhance chances for federal funding (to identify underlying mechanisms and additional applications)

- Science is important, but programmatic fit and deliverables are key

- Strict reporting expectations
NIH/NCI Grants: R01 vs R21

- **R01**: Main Individual Research Grant
  - Investigator-initiated or solicited (by RFA)
  - Single and multi-PI (MPI) applications allowed
  - 5 YEARS: renewable
  - Typically $250K-500 p.a.
  - Evaluated for predicted **Impact**, based on:
    - **Significance** (important problem?)
    - **Innovation** (conceptual and technical)
    - **PI(s)** *(relevant* training and productivity)
    - **APPROACH** (rigor? defined deliverables?)
    - Environment
  - **Key roles of prelim data & feasibility**

- **R21**: Exploratory/Developmental Grant
  - Key role of RFA; existing “parent” RFA
  - Typically single PI
  - 2 YEARS; **Cannot** be renewed
  - Up to $200K per year or $275k total
  - Evaluated for predicted **Impact**, based on:
    - **Significance** (important problem?)
    - **INNOVATION** (high risk - high reward)
    - **PI(s)** *(overall* training)
    - **Approach** (rigor? **can lead to R01**)?
    - Environment
  - **Lesser** roles of prelim. data & feasibility
NIH/NCI Team Science Grants: P01s vs SPOREs

**P01: Focus on Common Biology/Mechanism**
- 3-5 Research Projects and 3-5 Cores
- Typical budget 1-2M per year
- Each Core needs to support at least 3 projects
- All Projects need to show **scientific synergy** (more than a sum of all components)
- Projects are led by Individual Project leaders
- Key roles of Novelty & Scientific Integration (**common theme/mechanism**) 
- Can be renewed

**SPORE: Focus on Disease-Type/Pathway**
- 3-5 Research Projects and 3-5 Cores
- Typical budget 1.4-1.5M per year
- Each Core needs to support at least 3 projects
- **All projects need to be translational**
- Projects can be in different research areas
- Projects **co-led by Clinical and Lab Leaders**
- Focus on **clinical relevance/impact, past record & feasibility**, rather than novelty
- **Are expected to be renewed**
- **Training & developmental** (CDAs & DRPs)
Take Home Message

• NIH/NCI funding dominates but keep in mind all available alternatives
• *Tap the Big (& Growing) Barrel*: Growing interest of pharma in investigator-driven I-O research
• Plan ahead (one source of funding will help you with other sources)
• Consider your needs and the needs of the funding organizations: Make sure they match
• Be mindful of potential restrictions:
  • Eligibility (training & faculty status, citizenship/visa, affiliation, geography)
  • Budget & duration limits
  • Restrictions on spending (trials, animal research)
  • Frequency and character of reporting
• "*Fail early, fail often, fail forward*“ and enjoy the ride!