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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Sources of Cancer Immuno-Oncology Research Funding

Federal (NCI, DOD, SBA, VA, CDC, EPA ...)

State Agencies

Philanthropy

Biotech

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)
- Limits on animal research and clinical trials
- 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 include clinical research
- Projects can be in different research areas
- Projects co-led by Clinical and Lab Leaders
- Key roles of clinical relevance/impact, rather than novelty; feasibility & record
- Are expected to be renewed
- Training and developmental potential (CDAs and DRPs)
Take Home Messages

- NIH/NCI funding dominates but keep in mind all 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*": Enjoy the ride!