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Society for Immunotherapy of Cancer

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Obtaining Funding in Academia - Identifying and Selecting the Appropriate Grant

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Presenter Disclosure Information

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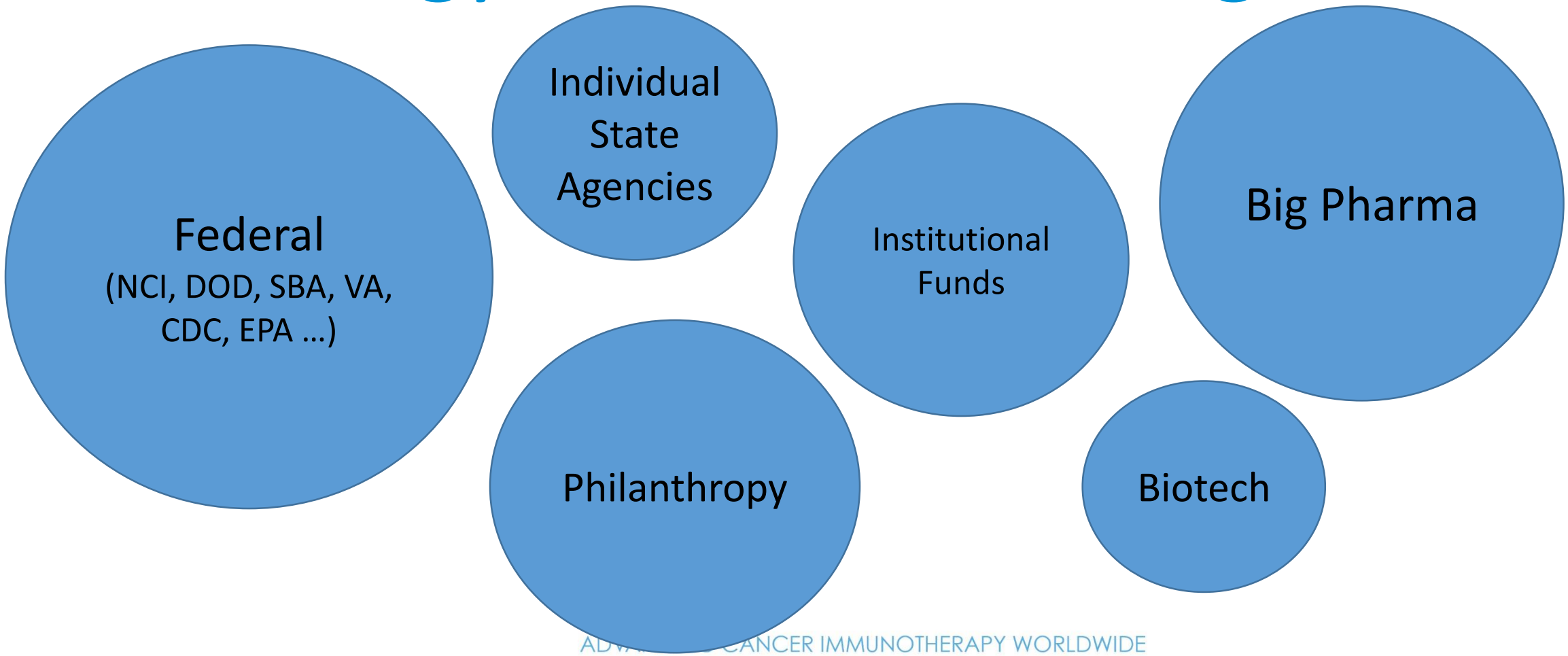
The following relationships exist related to this presentation:

- *KYN (Scientific Advisory Board)*
- *Immunicum (Scientific Advisory Board)*

Sources of Cancer Immuno-Oncology Research Funding*



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

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

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
- Area-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

State Funding: Considerations

- Multiple mechanisms, tailored to perceived needs of different states
- Focus on boosting the biomedical research within the state
  - Meant to boost local economy, healthcare, innovation, education
  - Promoting interactions with local biotech and pharma
  - Meant to enhance chances for federal funding or incentivize to obtain federal funding
- Matching funds are typically limited to the in-state portion of the "parent" grant
- Programmatic, rather than scientific review (reliance of parent grant review)
- *Often ignored by new investigators*

Pharma and Biotech Funding: Considerations

- Dominant (recently for I-O) source of funding of 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: P01 vs SPORE

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 led by Individual PLs

- Key roles of Novelty & Scientific Integration (**common theme/mechanism**)
- Can be renewed

SPORE: Focus on Disease-Type/Therapy

- 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 include clinical research
- All Projects need to show scientific synergy (more than a sum of all components)
- 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 DPs)

Take Home Messages

- NIH/NCI is King but keep in mind all alternatives
- *Tap the Big (New) Barrel*: New interest of pharma in 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
- 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

- Enjoy the ride!