

Funding Sources and Strategies for Applied Research

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Keys to Successfully Funding Your Research

1. Find a project that interests you
2. Identify the funding agency that fits the research question
3. Develop good grant writing habits – this is how you fund the most important problems
4. Don't give up!

A woman with long brown hair, wearing a dark polka-dot shirt and red pants, is smiling and holding a white cat with orange spots. The cat is standing on a red mat on a grey countertop. In the background, there is a wooden shelf with books and a framed picture on the wall. The text "Design a project that interests YOU!" is overlaid in the center of the image.

**Design a project that
interests YOU!**

Choosing a project

- First and foremost, it is IMPERATIVE that YOU believe (and really like) your research!
- Reviewers can sense if you have concerns about a project
- Good grant writing requires a bit of salesmanship-if you do not believe in the project it will be hard to “sell it to reviewer”

Choosing a project

- Good grant writing requires a substantial amount of time and effort
 - Reading background material
 - Developing the hypothesis
 - Writing the methodology
- Never develop a grant unless you will be incredibly excited to have the opportunity to perform the research
 - -it may get funded and then you will need to do the work!

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Choosing a project

As a resident, it may not always be possible to specifically define the project that you will be working in

We often work in an area defined by our mentor

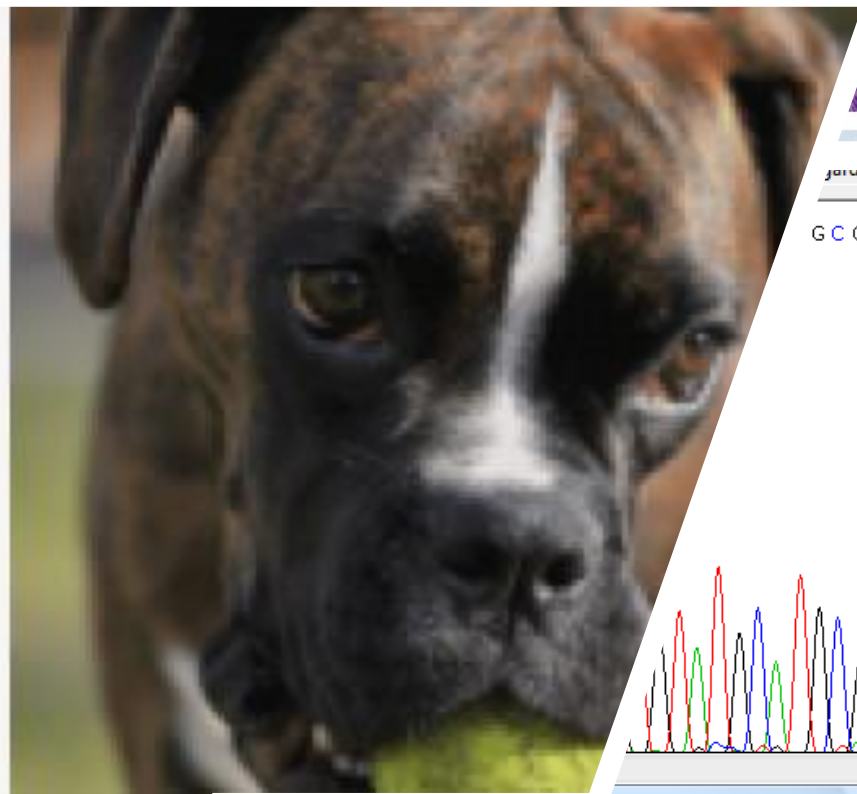
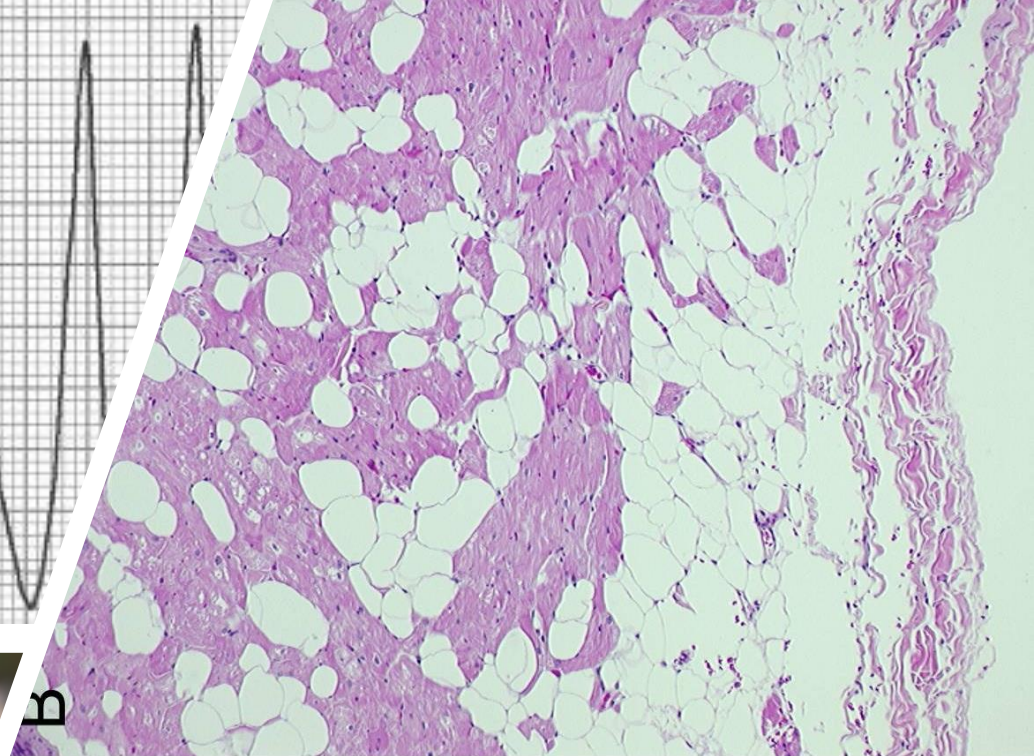
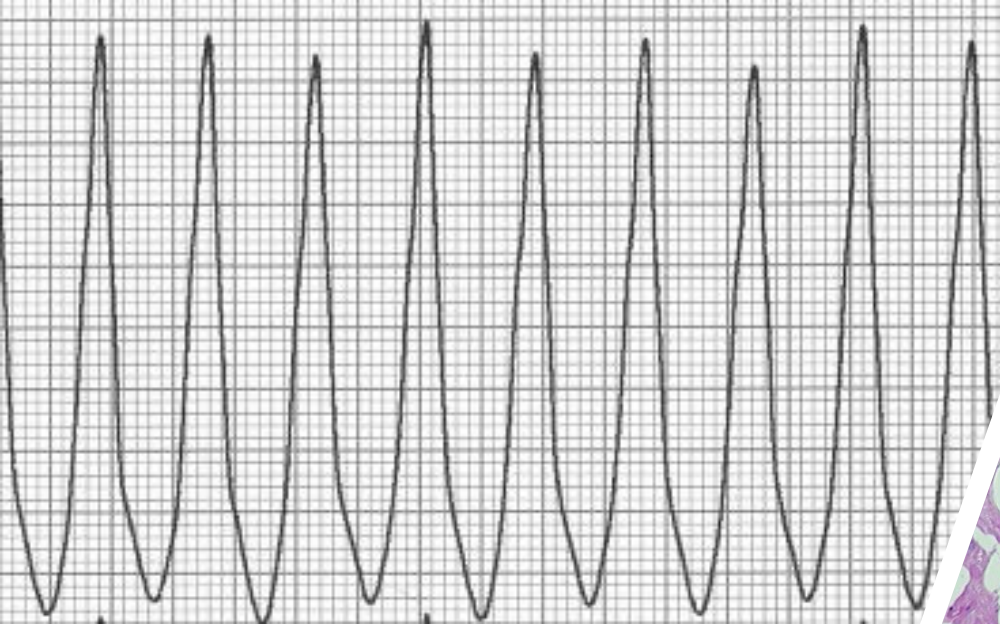
Choosing a project



- However, you can identify the areas of your specialty that fascinate you the most
- **Work to build your research, experiences and publications in YOUR niche as much as possible (this will be a career long process!)**
- Reviewers will look at your CV to see if you are beginning to build your career around the area of research you are proposing

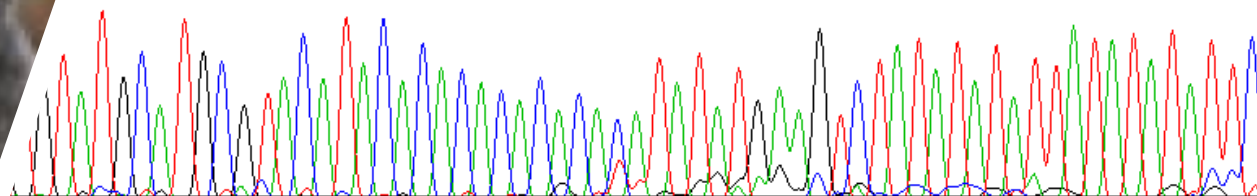
Choosing a project

- If you have completed your assigned residency project, perhaps you will have time to pursue a small project of your interest
 - This can be used to start to build the independence on your CV



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**Finding a grant agency
that fits your research**

Funding Sources

- **DO** -- Find the funding agency that fits your research
 - Build a career around a research question that interests you and become known to agencies that fund that area
- **DON'T** -- find research to fit a funding agency!
 - Don't chase the \$\$

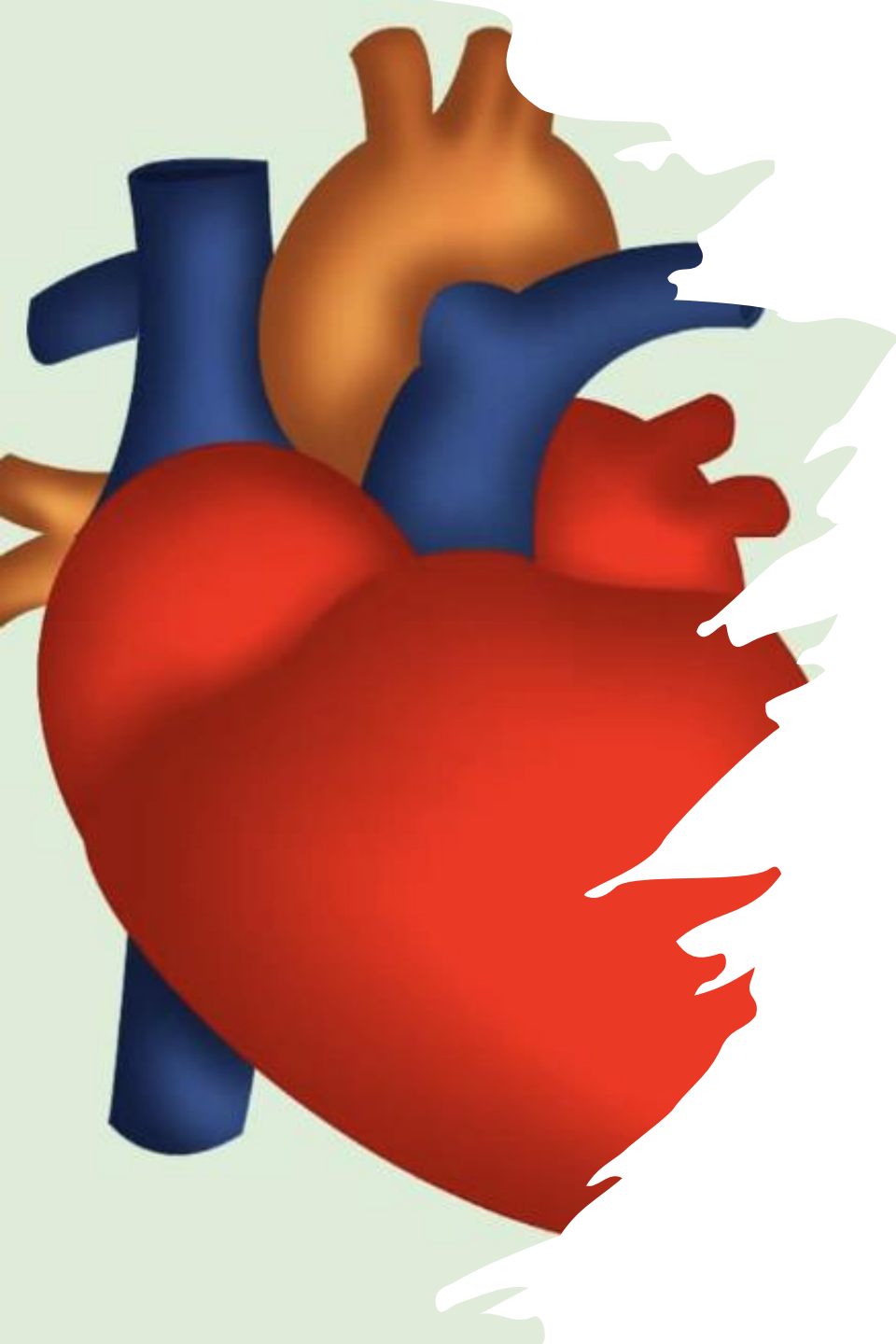
Common funding agencies for DVM clinician scientists

- American Kennel Club-Canine Health Foundation
- Grayson-Jockey Club Foundation
- Morris Animal Foundation
- EveryCat Health Foundation Association
- National Institutes of Health

Finding a grant agency that fits

Agencies are funded by very specific resources and have very specific needs

- No matter how wonderful your grant is – they will not fund it if it does not suit their needs



Finding a grant agency that fits

For example:

An agency puts out a call (RFP) to fund clinical studies that test new treatments for heart failure

Finding a grant agency that fits

Investigator X submits a grant with a hypothesis:

H1: Early heart failure can be identified with a biomarker

The reviewers quickly discard the grant since:
Studies to look at diagnosing heart failure are not specifically directed at TREATMENT



**Develop good
grant writing
habits**

Good Grant Writing Habits

- Prioritize and emphasize a solid Hypothesis and Aims
 - Be efficient and correct with other components
- 2. Make time to write
- 3. Identify people to critique your work

The Grant

Hypothesis – your major intellectual contribution, spend the most time and THOUGHT on this

Just be accurate about the rest:

- Background
- Materials & Methods
- Statistical Design
- Budget
- Format

Hypothesis

- The Hypothesis is one of the most CRUCIAL parts of the grant
- This should be the FIRST part of the grant that you work on
- This should be the section that you spend the largest amount of time on!

Background

- References should be as current as possible. Mention landmark studies but be sure that you have done a recent survey of the literature
- If you or a Co-investigator have published on the topic, be sure to include them!
- AVOID using textbooks and book chapters as references

Materials and Methods

State all important techniques needed to do the research and PROVE/DISPROVE Hypothesis

Be sure what you are proposing will test the Hypothesis

Materials and Methods

- Clearly state - a few possible limitations/pitfall of your approach and how to deal with them
- Tells the reviewer that you know the issues may arise and you are prepared for them

Statistical Design

- **Always** provide the reviewer with an indication of how you determined the needed number of cases, repetitions, assays, etc
- Perform Power Calculations if at all possible even if you have limited pilot data

Statistical Design

- Always state how the data will be analyzed
- Always define what you will consider to be statistically relevant

Budget

- You can anticipate that in most cases, the reviewer will carefully scrutinize the budget
- Include all needed costs, but be careful that there is no appearance that you are “padding the budget”
 - Be as specific as possible

Formatting the Grant

- Each grant agency has their own, very specific guidelines.
 - These may include page margins, forms, deadlines, etc
 - It is IMPERATIVE that you follow the directions EXACTLY
- Reviewers are often volunteering their time and are very busy experts in the field.....

Formatting the Grant

Failure to follow the exact directions --- even font size or page margins, is **almost always a reason for dismissal of the grant without it being reviewed!**

If you are going to take the time to write a grant, **BE SURE** to set aside time to properly go through the directions and guidelines

Finding Time to Write a Grant

Your Writing Plan of Action

- Work backward from Due Date to make a schedule
- **Plan enough time to get feedback from others**
- Spend the most time on Hypothesis/Aims

Time Management



Good grantsmanship requires a fair amount of time (developing the hypothesis, reading about background and methods, calculating the budget etc)



Start early!! Because.....

Unforeseen issues!

- There are many unforeseen obstacles that may develop as you go forward
 - Power calculations indicating you would need to study 5,000 horses in order to obtain statistical power
 - Determination that a key reagent needed for an assay has been discontinued

You want to have plenty of time to be able to be flexible !!

Exhaustion!

- Mental fatigue- you want the grant to read well and the reviewer to sense your passion and enthusiasm
 - When you are writing the grant at 3am, 24 hours before the grant is due, it is hard to be enthusiastic
 - Mistakes will be (and have been) made!



Red Tape!

- University Grant and Development agencies require extramural grants to be signed by department heads, deans and university officials.
 - They takes time!
 - The University may require that the COMPLETED grant be in their office 1-7 days BEFORE the grant is actually due

- No matter how successful procrastination has worked in other areas of your career (cramming for exams etc)

**IT WILL NOT WORK WELL WITH
GRANT WRITING**

Time Management

- Work on the Hypothesis and Aims – FIRST
- Send to a friend or mentor to review while you work on Background/Methods

Time Management

- Ideally, plan to set aside a small amount of time (2 hours) 4-5 times /week for at least a month before due (longer if NIH level)
 - This will help prevent the grant fatigue that occurs from being forced to do a lot all at once
 - This time slot should be put ON YOUR SCHEDULE

- CLEARLY, this IS very challenging when balancing a clinic load
 - Clinician scientists need to start even farther in advance so that they can use their off clinic opportunities



**Clinician
scientists are
EXCEPTIONAL
individuals !**

- They use their unique clinical skills to ID important clinical research problems
- They use their unique research skills to solve important clinical issues

**They are members of an ELITE
and small group of individuals
who can actually move
veterinary medicine forward**

However, Clinician Scientists have
to be just a little better than the
average person at time
management

**Identify people to critique
your work**

Feedback

- No matter how many grants you have written (and gotten funded) – make time to get feedback before it goes out the door!
 - Don't let the reviewer be the first person to catch your typos
- The more you get feedback, the more comfortable you will be with it!

Peer Mentoring

- Form a group at the same career stage – swap grants with each other
 - Ideally meet as a group and discuss with track changes
 - Just email back and forth
 - Allow at least 72 hours for a careful read



Experienced Mentor

- Identify individuals with funding success & ask them to read your grant
 - Provide them your work after a peer has reviewed
 - Allow them 2 weeks turn around
 - They are busy!

Finally....

Go through one more time:

- Make sure hypothesis are not dependent on each other
- Make sure methods can test hypothesis
- Make sure you have power calcs and assesment stats
- Make sure you are not exceeding page limits, format rules
- Set realistic goals for your success....

Keys to Increase Research Funding

Factors that increase funding success*

- Grantsmanship training
- Attendance at association meetings (networking)
- Research team size (faculty, post docs, grad students, technical assistants, professional support)
- Number of proposals submitted (PERSEVERENCE)

**Please
Don't
Give Up!**

