Grant writing and the VR

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A research group at MedFarm

This presentation

- **What I think matters in an application (4 specific things).**
- **VR from a reviewer perspective. Common problems in applications.**
- **Premise for the presentation:**
  - *Lived experience (n=1, but 20 work years, >100 proposals written).*
  - *The opinions or suppositions expressed are my own.*
  - *I'm assuming that many in the audience are early-career scientists.*

What I think matters, part 1: you are not asking for money

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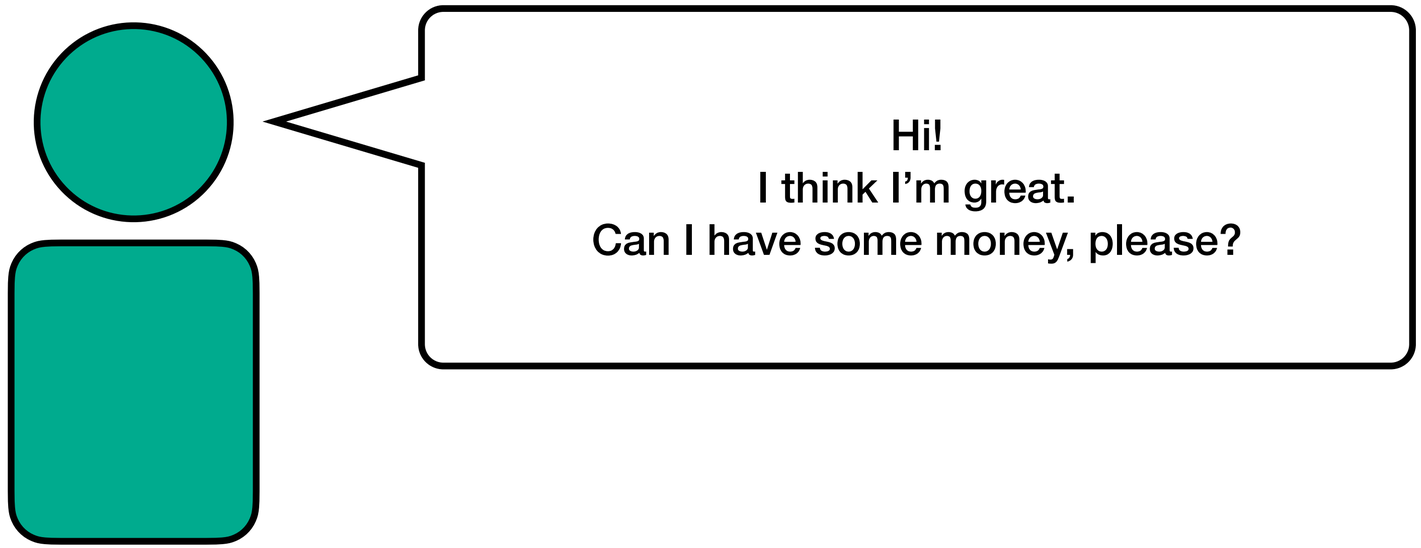

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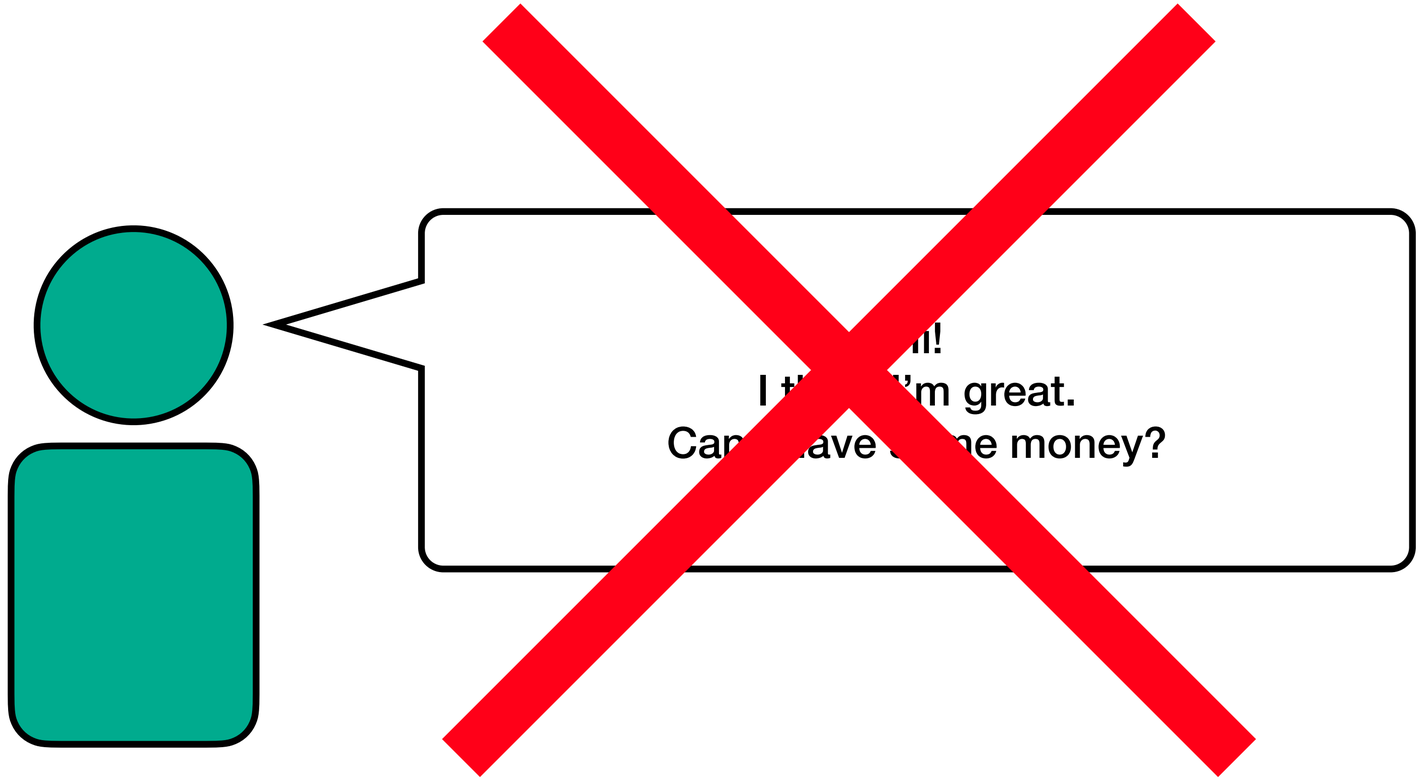

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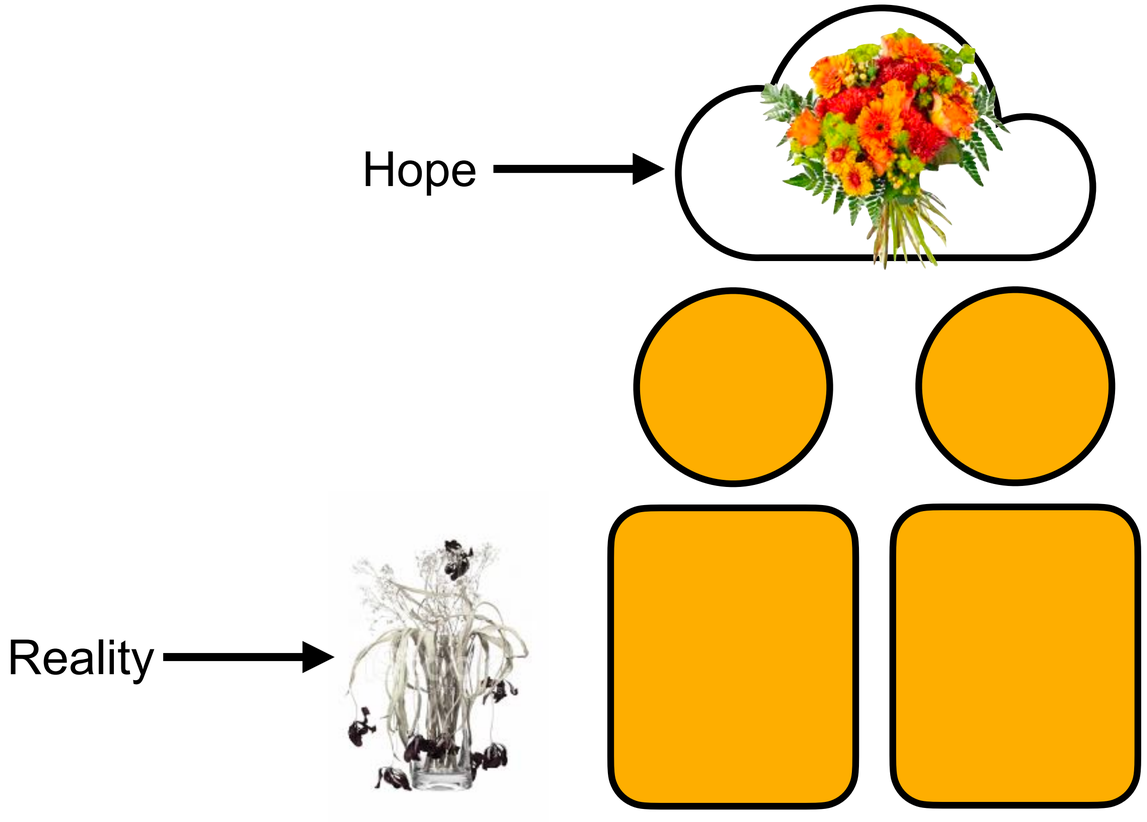
- You are approaching a specific group of people, with specific beliefs/hopes, offering to help



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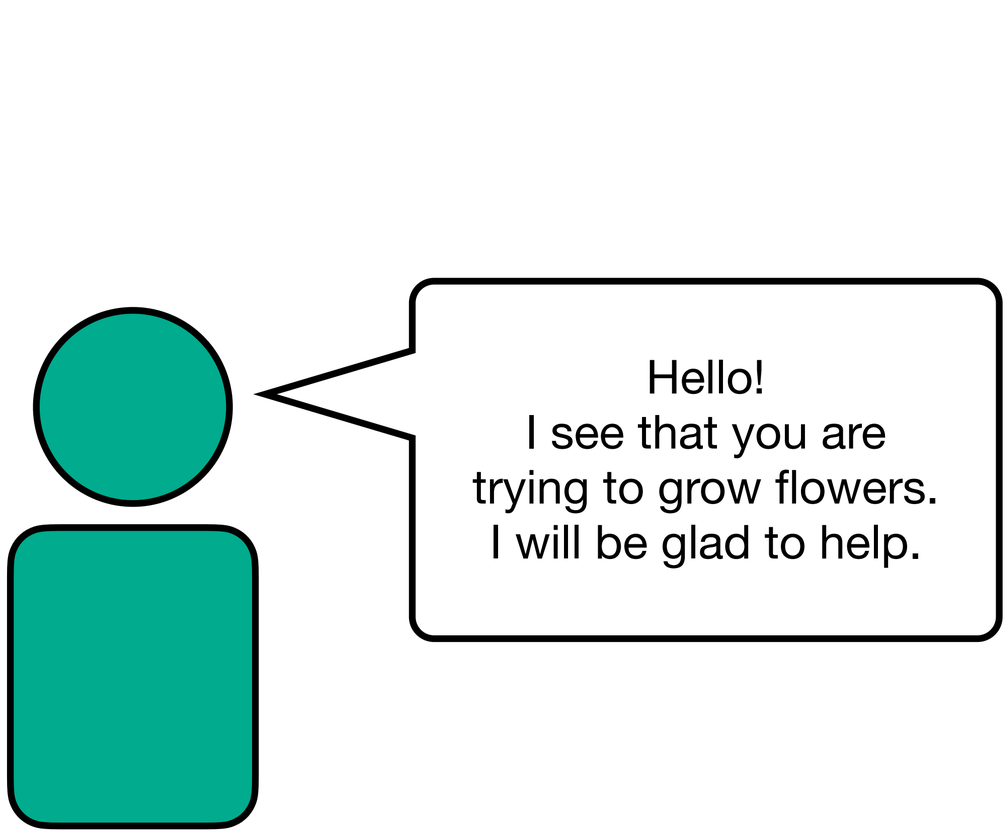
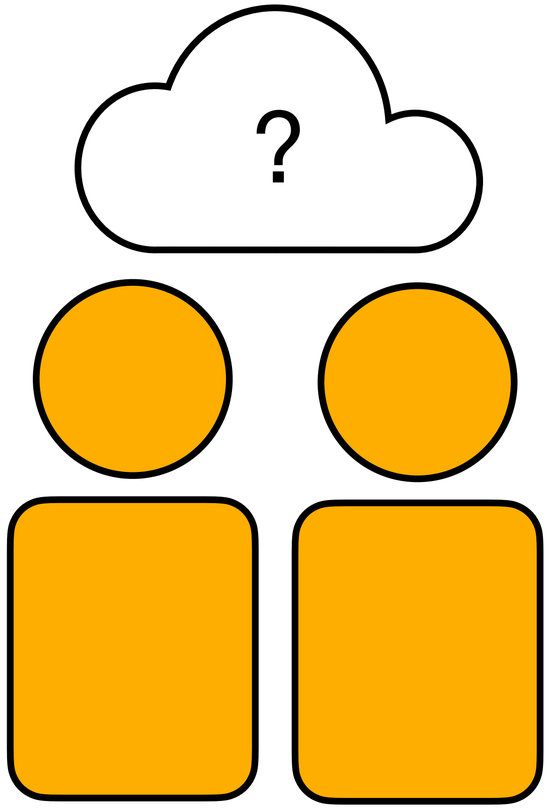


What I think matters, part 1: you are not asking for money

- You are approaching a specific group of people, with specific beliefs/hopes, offering to help
- **And you will contribute something new and fantastic.**

You need to make assumptions of what drives the funder



A cancer charity
A research council*
A foundation
An academy
A drug company
A university board distributing spending
A philanthropist
A foreign agency

* In terms of ”decoding” what drives the funder, VR is in the easy part of the spectrum

What I think matters, part 2: get to the point

What I think matters, part 2: get to the point

- **Minimally, the reviewer wants to know what you are PLANNING TO DO (and why)**
- **Help them achieve this within 60 SECONDS**
- **PAGE 1 is the place for this**

Integrative discovery of treatments for childhood neural cancers

Purpose and aims

In this proposal, we will implement a cross-disciplinary research program to target three challenging cancers of the nervous system: neuroblastoma (NB), medulloblastoma (MB), and pediatric diffuse midline glioma (DMG). Despite major advances in the molecular exploration of these diagnoses, we still lack potent and safe therapeutic options for children with high-risk disease. To address this shortage, we will develop an innovative pipeline for target discovery, based on a computational model. The model is constructed from a combination of large public datasets and our own profiling of Swedish patient-derived cell cultures. Using the integrated model, we will predict interventions that suppress growth, differentiation, and invasion pathways, which are evaluated in patient-derived tumor cells **(Figure 1)**. The most promising treatments will be assessed for in vivo effect and safety. **We aim to**:

1. **Combine large scale analysis of patient-derived cells and integrative modeling to identify priority targets in NB, MB, and DMG.**
2. **Characterise the predicted targets in patient-derived cell cultures and *in vivo* models.**
3. **Provide an online discovery resource for predictive modeling of interventions in childhood cancers.**

Building on a substantial body of computational and experimental preliminary results **(Figures 2-4)**, this project will be conducted by a skilled interdisciplinary team, with a significant track record in data integration and neural cancer cell-based assays and mouse models (1; 2; 3; 4; 5; 6; 7). Bridging childhood tumor biobanks, drug profiling data, and patient-specific disease models, this research can unlock specific therapeutic opportunities ultimately aiming at curative therapies against three high-risk childhood cancers, while also providing a broadly applicable methodology.

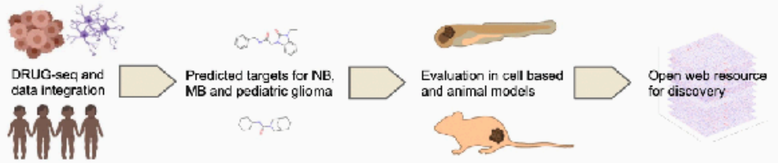


Figure 1: Project overview. We will combine new drug profiling methods, data analysis and patient cell-based models to uncover treatment opportunities for pediatric nervous system cancers. Data are shared as a resource.

New strategies are needed to target neuroblastoma, medulloblastoma, and pediatric glioma. Research in recent years has identified promising new interventions against childhood neural cancers. In NB, activating *ALK* mutation provides a tractable therapeutic target in the rare fa-

What I think matters, part 3: clarity and structure

Pasta.

Pasta.

Example of structured writing

Verb-driven sentences

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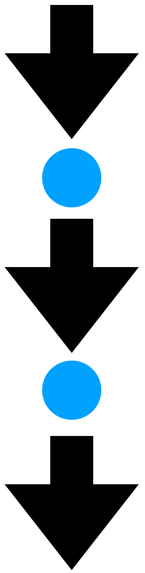
Logical flow markers



What I think matters, part 4: look-and-feel

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OK layout

OK figures

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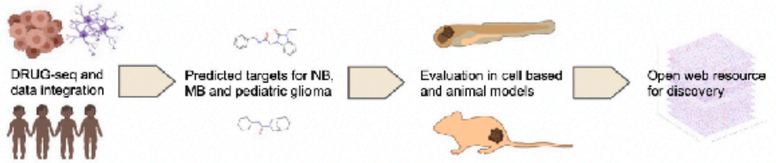

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Balancing broad description and specific detail

Miniheaders enable skim reading

Getting an intuitive feel for quality takes just a second

Wikihow: how to paint a lighthouse

D Rogers (källa: amazon)

E Hopper (källa: Metropolitan)

L. Lerin (källa Bukowskis)

A Wyeth (källa: Christies)

Overall impression from national and international panels

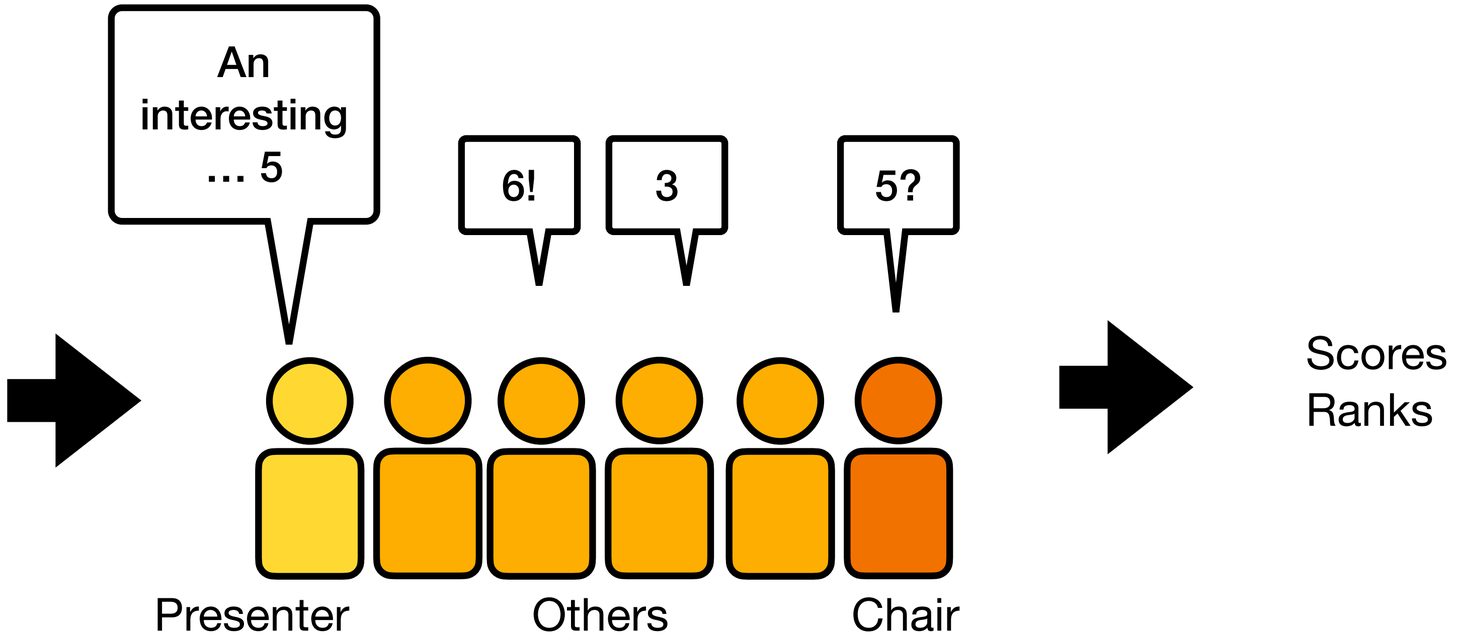
- **Serious, national-level project funders (e.g. VR, Cancerfonden, SSF, ZonMW, CRUK, BMBF, and many others) have - in my experience - similar panel dynamics:**

- **Overall …**
  - *qualified experts doing their level best to prioritize*
  - *balanced and fair discussions*
  - *diverse and well chaired*
  - *tendencies tend to average out*

- **Swedish funders have a comparably informal process - short texts, no rebuttal cycles etc**

A typical VR reviewing experience

Present on ~10
Read ~ 50
600 pages



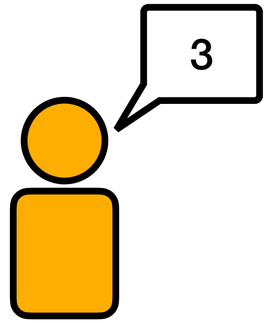
Potential reviewer idiosynchrasies (egenheter)

- **Scientific taste:** type of problem, approach, risk level
- **Focus**: big picture vs detail, cool science vs alignment with call
- **Risk for self-justification or kin-group effects**
  - *Omics vs old-school*
  - *MD vs basic scientist*
  - *Status indicators (ERC, Stanford postdoc, etc)*
  - *Reputation or pedigree (former student of …)*
- **Risk for activism or bias**, i.e. seeing the applicant as part of a group, like ’60-plus male’, etc

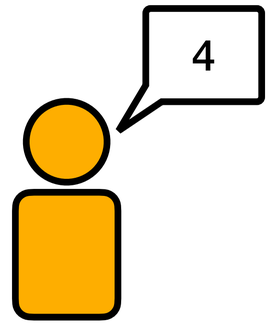
Vaccinate your proposal against critique

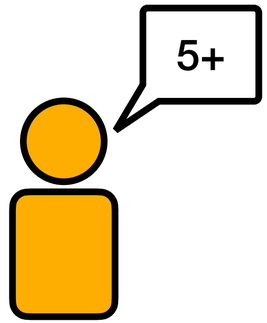
- **First or last author work in selective (IF>8 or so) journals**
- **Put your eggs in not 1 but 3 baskets:** problem, materials, and approach
- **Be subtly exuberant and show strong preliminary data** (everybody likes a hard-working enthusiast)
- **Explain the terrain**
  - ***If you do omics, make sure the proposal is relatable for a reductionist, and vice versa***
  - ***If you are an MD, make sure the proposal is relatable for a basic researcher and vice versa***
- **Subtly clarify the diversity of the team**
- **Avoid worn-out jargon or grandiose terms**, be concrete and interesting instead
- **Never ever:** make excuses, express frustration, or list papers that are not real papers

Not uncommon ’fail modes’

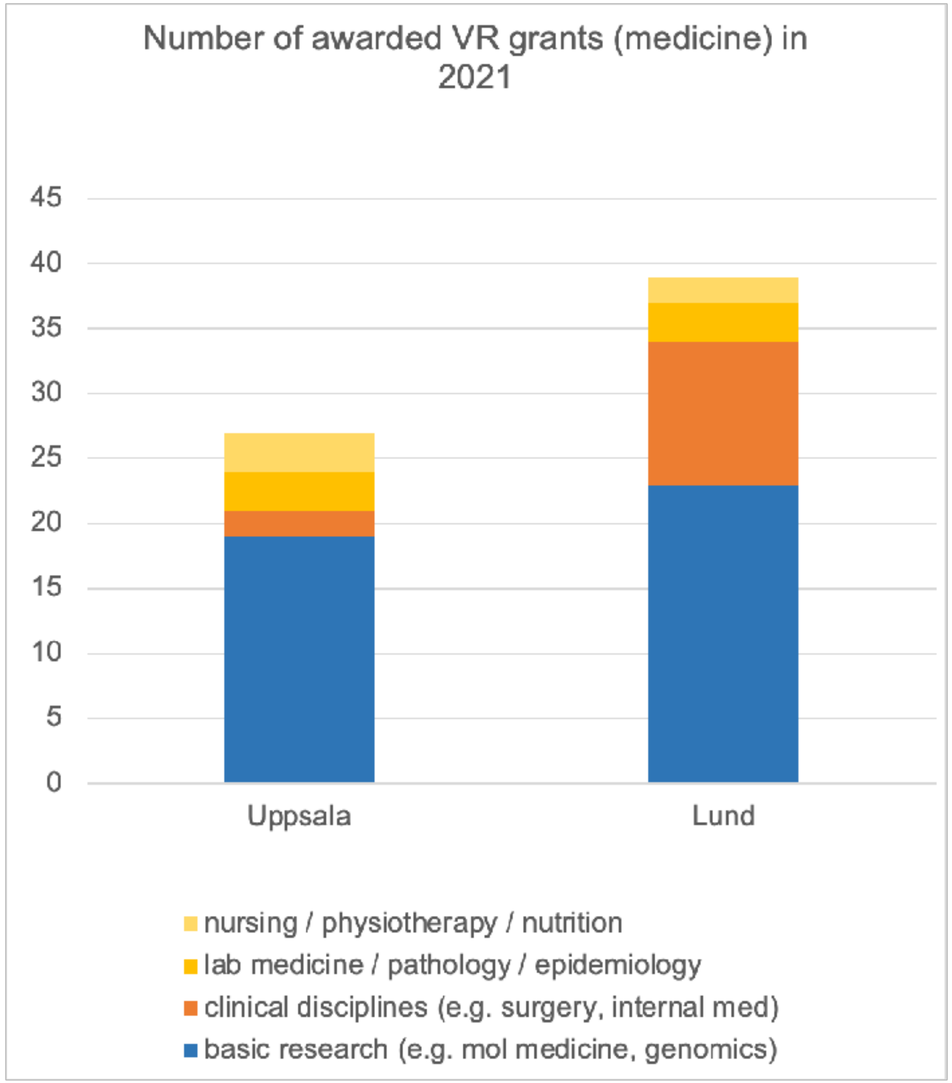


- **CV premature or not strong enough**
- **Simply not great: draining read, or strong sense of fish-out-of-water**
  - *‘… the C3PO complex is purified on a R2D2 column which is …’*
  - *‘…leveraging state-of-the-art multi-omics for a unique precision theranostics approach …’*
- **Clear idea and OK presentation, but too standard**
  - *‘I have these interesting samples, and SciLifeLab will…’*
  - *’Do ABC123 inhibitors work in Uppsala, too?’*
- **Good idea, but the applicant/setup seems unproven, unconvincing or premature**
- **Established applicant with doubts regarding productivity and/or lackluster proposal**
- **Bad luck. Fundable, but this particular sample of referees didn’t like it enough**





Uppsala vs Lund, 2021



Total counts from VR
Subdisciplines identified by looking up each PI online

What can be done to turn a 4 or 5 into a 6?

- More and stronger recent last author work
- More and stronger preliminary data
- Get feedback from frank colleagues with good taste (accountabilibuddies)
- Be strong in each of (i) question/storyline, (ii) materials and (iii) approach
- Go beyond the state-of-the-art (most of the time, what's done on a core facility isn't novel)
- Find a unique / unexpected combination of themes (e.g. psychiatry and single-cell epigenomics)
- Put your work in context - explain why it's a major opportunity here and now
- Budget tables and GANTT charts can help you structure your plans
- Try again in another panel

Thank you!

3 Exercises on next page

3 exercises

- **Deconstructing a funder.** For a particular funder you have in mind, try to articulate in some detail three reasons why they might support research:

    - ***one matter-of-fact reason*** *(e.g. learning more about the world, reduce carbon emissions)*
    - ***one idealistic reason*** *(e.g. save the planet, promote democracy)*
    - ***one "crass" reason - if any*** *(e.g. enacting an agenda, status, tax planning)*

    The first two can be used in the Importance section, the last is good to keep in mind)

- **Everyday object.** Before you write about something complicated, try to explain something simple. Pretend that an everyday object (like a water-hose) doesn't exist, and write page 1 of a proposal on that topic (what problem does it solve etc) *

- **Zero jargon.** Let's face it. Most ideas in science and scholarly work are, in fact, simple. Let the idea shine, in its clearest form. Try to express what you do in the clearest/simplest terms…
    - without any impressive or orthodox terminology
    - without any reference to famous sources or people