Workshop 3: Research Funding

Dr. Ayman Akil (Head of Professional Services Research and Academia)
Dr. Nicolas Teeny (Senior Consultant in Research and Academia)
Iulian Herciu (Advisory Services Consultant, Research and Education)

Presenters

Dr. Ayman Akil
Head of Professional Services
Research & Academia - MENA
Clarivate

Former researcher at Max Planck Institute with more than 12 years of experience in research management, assessment and planning, university ranking, R&D projects.

As a researcher, Dr. Akil works closely with universities and research entities helping them at assessing their performance using sophisticated bibliometric indicators and methods. In addition to this, Dr. Akil works with industrial companies to offer Knowledge-based solutions and has notable experience in quantum optics, ultrafast dynamics down to Attosecond resolutions, spectroscope methods and muon-spin rotation measurements. He has published many articles in journals of high repute.

Public profile: https://linkedin.com/in/ayman-akil-phd-b10446127/

Dr. Nicolas Teeny
Senior Consultant in Research and Academics - MENA
Clarivate

Former researcher at Max Planck Institute with more than 7 years of experience in research management, assessment and planning, R&D projects and strategic planning. Additionally, Dr. Teeny has 3 years of experience in forming strategies of international leading companies in diverse industries at the intersection of business and technology.

He works closely with universities and research institutes helping them at assessing and evaluating their performance using sophisticated bibliometric indicators and methods. Dr. Teeny has notable experience in atomic physics, quantum dynamics, laser-electron interactions and solid state physics. He has published eight articles in highly reputable scientific journals.

Public Profile: www.linkedin.com/in/nicolas-teeny

Mr. Iulian Herciu
Advisory Services Consultant,
Research and Education- MENA
Clarivate

Mr. Iulian Herciu has more than 15 years of activity in scientific information industry. He has worked with all levels of stakeholders involved in research and scientific information dissemination.

During his career he had interacted with all major international scientific publishers. This allowed him to have an overview of collaboration opportunities available and different ways in which they can be capitalized by scientific universities.

This holistic experience was extremely useful on his current role at Clarivate Analytics. His main objective is to support universities and researchers in getting a better understanding of current scientific and R&D landscape.

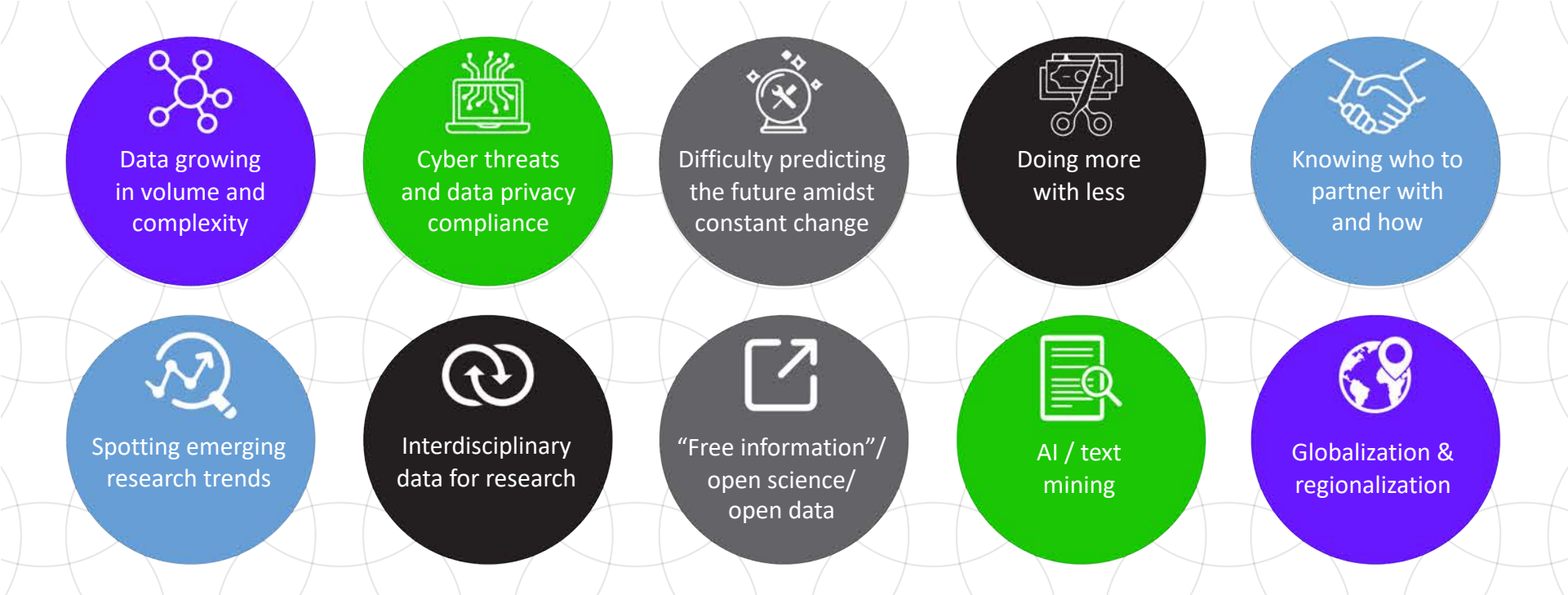
Public Profile: www.linkedin.com/in/iulianherciu

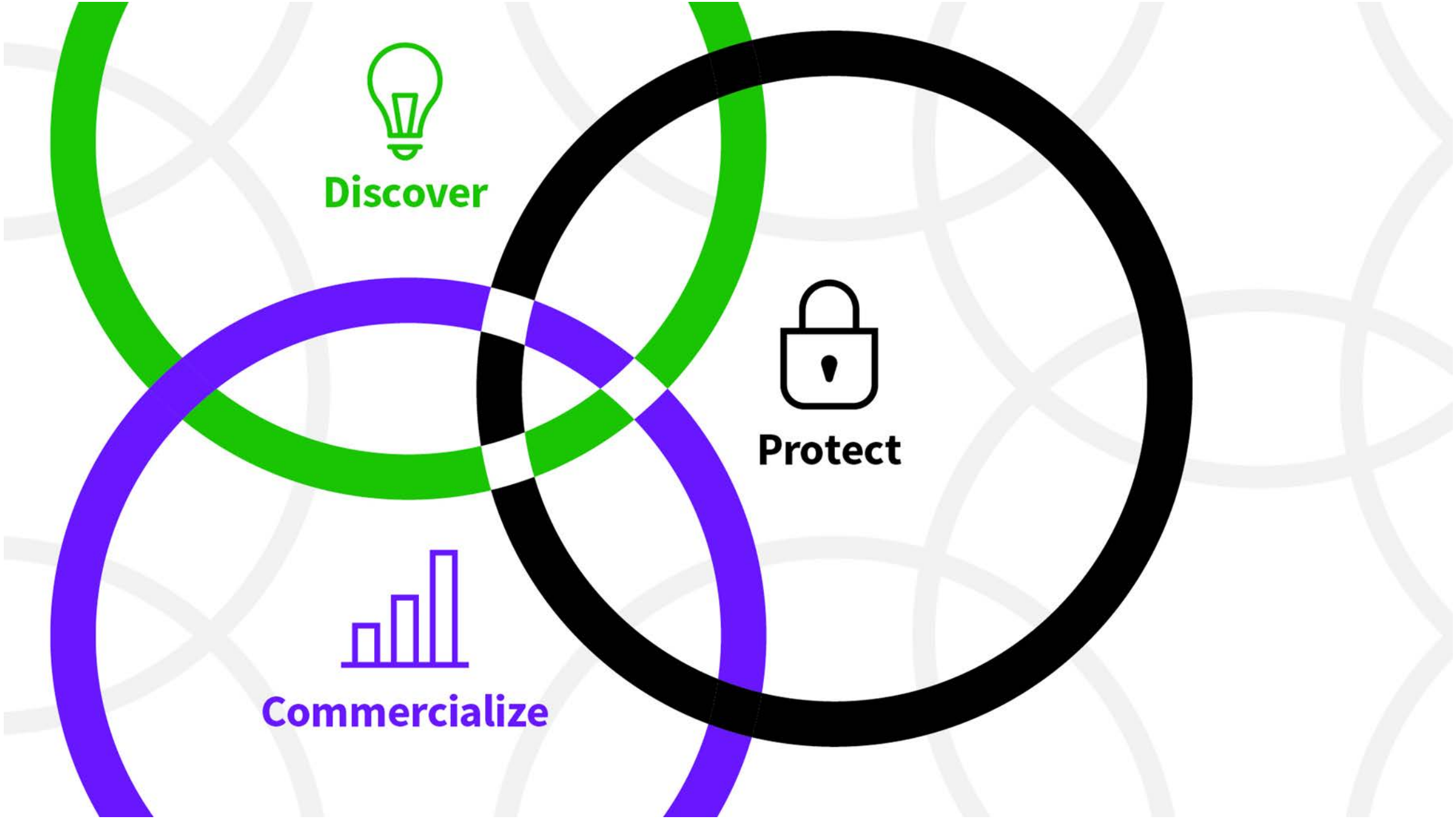
Agenda

1. About Clarivate
2. Introduction: funding, science & the economy
3. Research Grant Proposal: General Guidelines form A to Z
4. Research Grant Proposal: Structure and Writing Tips
5. Funding Agencies Overview in Egypt
6. Fund Opportunities for Egyptian Researchers: STDF and international collaborations

About Clarivate

Innovators today face major challenges and opportunities




Discover
Protect
Commercialize

Clarivate tools along innovation and research lifecycle

Scientific and
Academic Research

Patent Research,
Intelligence and Services

Industry Codes
and Standards

Life Sciences
Intelligence and Analytics

Trademark Research
and Protection

Domain and Brand
Protection

Intellectual Property
Management

Our partners

Academic Institutions

CAUL – Council of Australian University Librarians
CRKN RCDR – Canadian Research Knowledge Network / Réseau canadien de documentation pour la recherche
CRUI – Conferenza dei Rettori delle Università Italiane
中國科學院 – Chinese Academy of Sciences
TEXAS – The University of Texas at Austin
ORBIS CASCADE ALLIANCE

Commercial Enterprises

3M
AstraZeneca
CSL
Roche
Lilly
Cochlear
NOVARTIS
Johnson & Johnson
GE
ExxonMobil Chemical
Microsoft
SANOFI
Pfizer
PHILIPS

Governments

United States Patent and Trademark Office
European Patent Office
SDL المكتبة الرقمية السعودية Saudi Digital Library
CSIRO
Australian Government IP Australia
JPO Japan Patent Office
Danish Patent and Trademark Office
1640 The National Library of Finland
State Intellectual Property Office of The P.R.C 中华人民共和国国家知识产权局

49 *of the* top 50
pharma companies use Cortellis

More than half
of Fortune 100 uses MarkMonitor

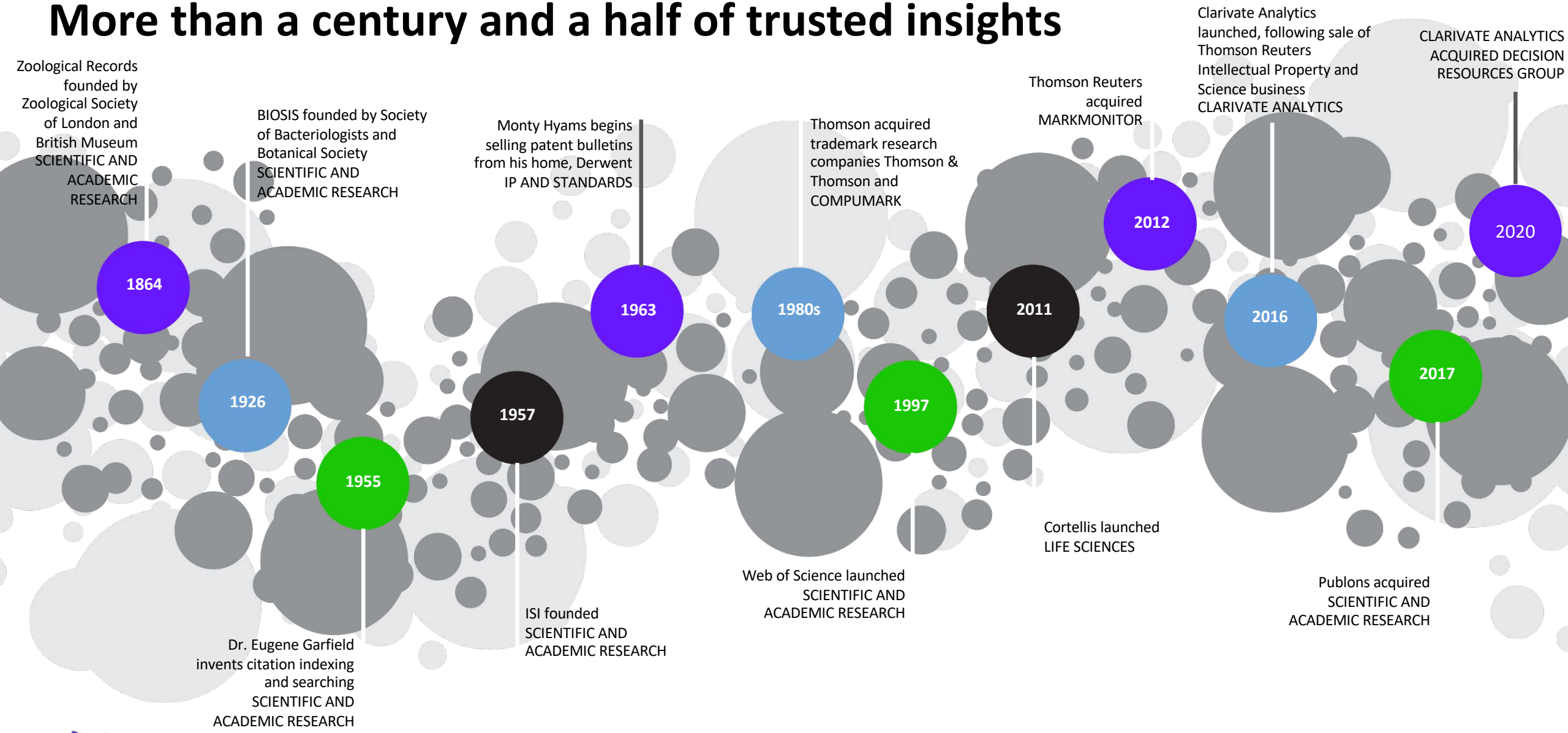
9 in 10
of the world's most valuable brands use CompuMark

40+
Patent issuing authorities worldwide use Derwent World Patents Index

1 billion
cited references are accessible through Web of Science

Clarivate™

More than a century and a half of trusted insights



Clarivate™

Governmental partnerships

Egypt EKB

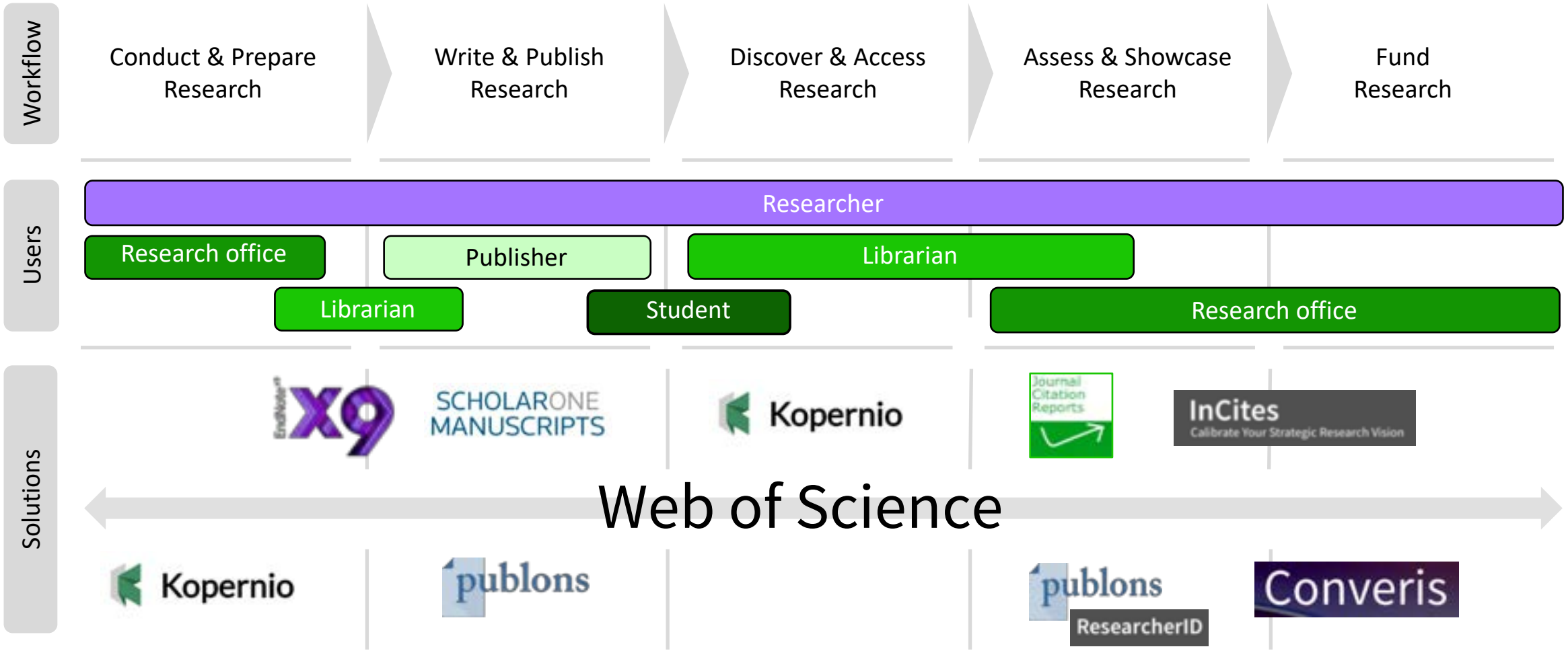
UK REF 2021

This information includes data about the number of times a scholarly publication has been cited in other scholarly publications – called citation counts. Eleven of REF 2021's 34 expert panels have said they plan to use citation data to inform the peer review process during the assessment phase of REF 2021.

Directorate for ICT

Ministry of Research, Technology and Higher Education of Indonesia (RISTEKDIKTI)

The Web of Science Group supports the entire research workflow



Introduction

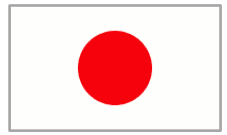
Is research related to Economy?

Relation of GDP to research output

Top 10 GDP IMF 2019 in trillion U.S.D

1	2	3	4	5	6	7	8	9	10
									
21.44$	14.14$	5.15$	3.86$	2.94$	2.83$	2.71$	1.99$	1.85$	1.73$

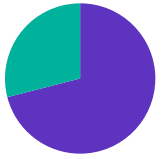
Research Output 2019 Incites

1	2	3	4	5	6	7	8	9	10
									

Is research related to Economy?

Top 9 countries in R&D spend

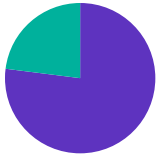
476B



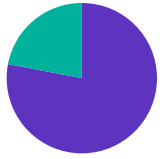
110B

52B

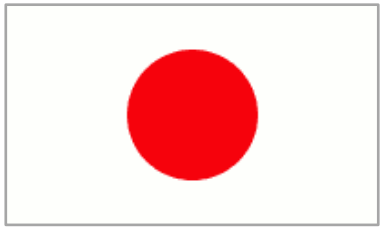
372B



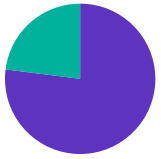
73B

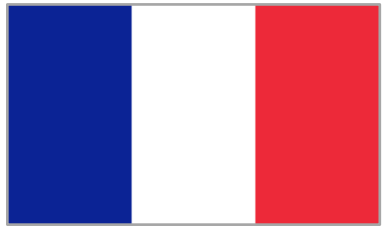


44B



170B





61B

42B

Clarivate™

Private

Public

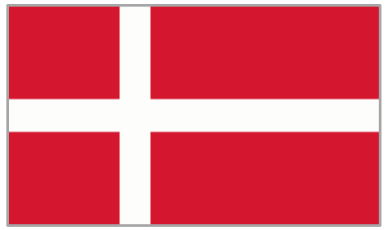
Source: UNESCO

Is research related to Economy?

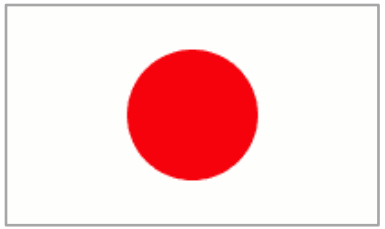
Top 9 countries in percentage of GDP in R&D spend

4.3%

3.2%



2.9%

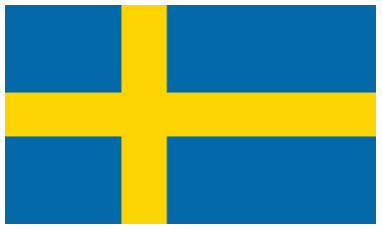


3.4%

3.1%

2.9%

3.2%



3.1%

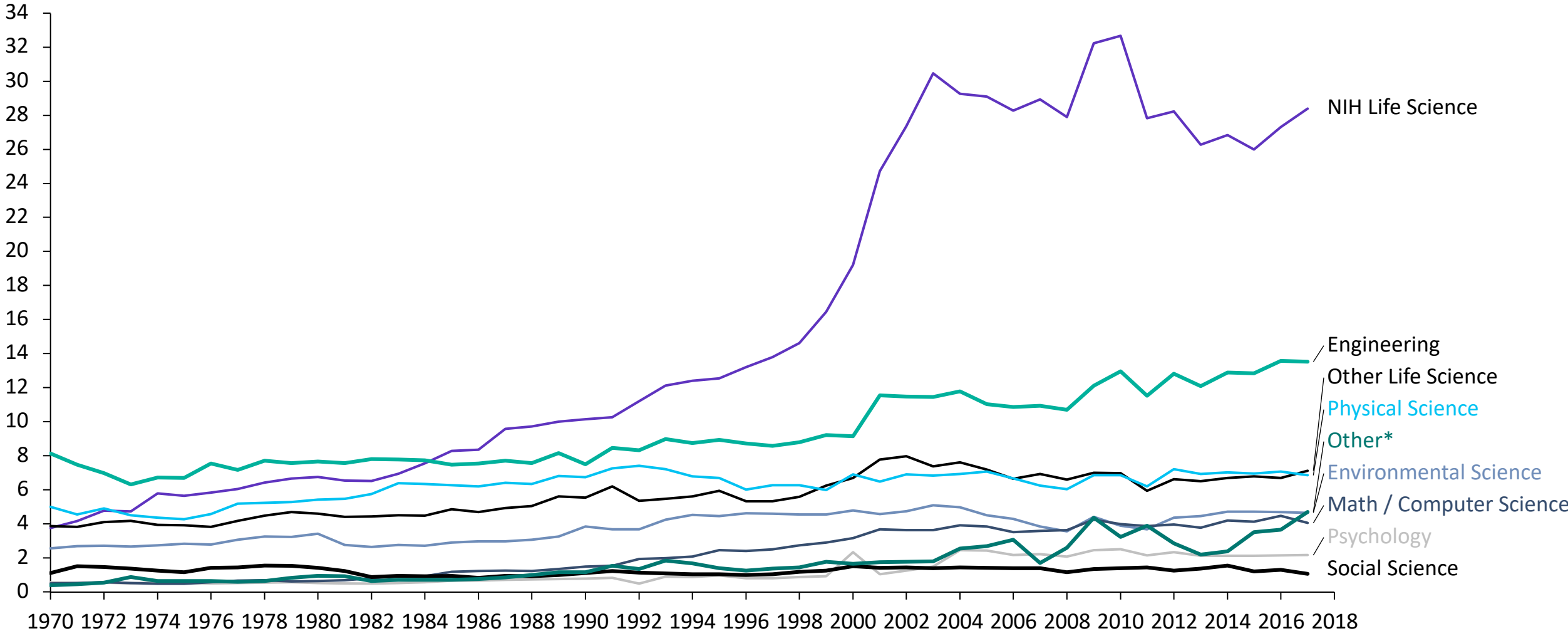
2.7%

Clarivate™

Source: UNESCO

Federal Research Funding By Discipline, 1970-2017

Budget authority in billions of constant FY 2019 dollars

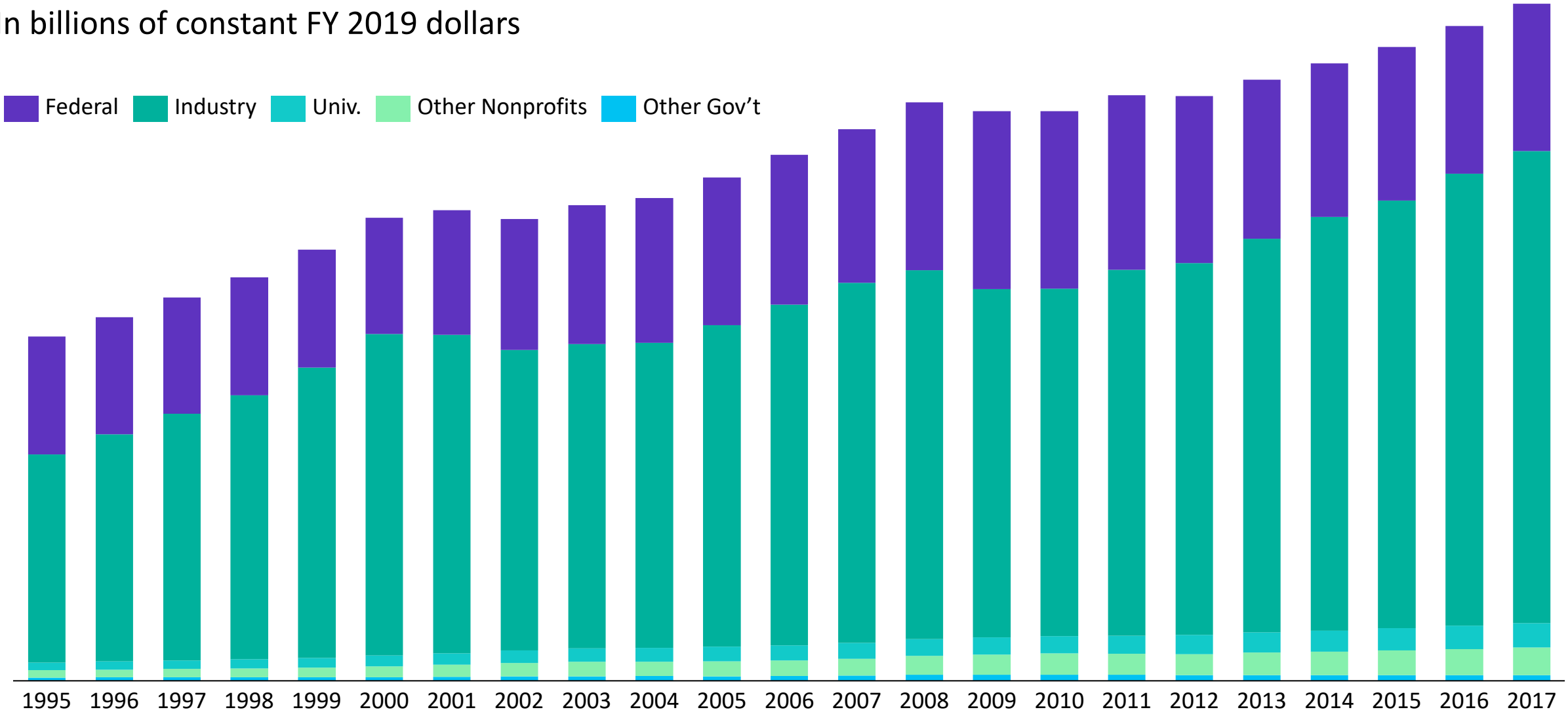


Clarivate™

Source: Source: National Science Foundation, Federal Funds for R&D survey data series, available at http://www.nsf.gov/statistics/fedfunds/. Includes Recovery Act funding starting in FY09. Constant-dollar conversions based on GDP deflators from Budget of the U.S. Government FY 2020.

U.S. R&D Funding by Source, 1995-2017

In billions of constant FY 2019 dollars

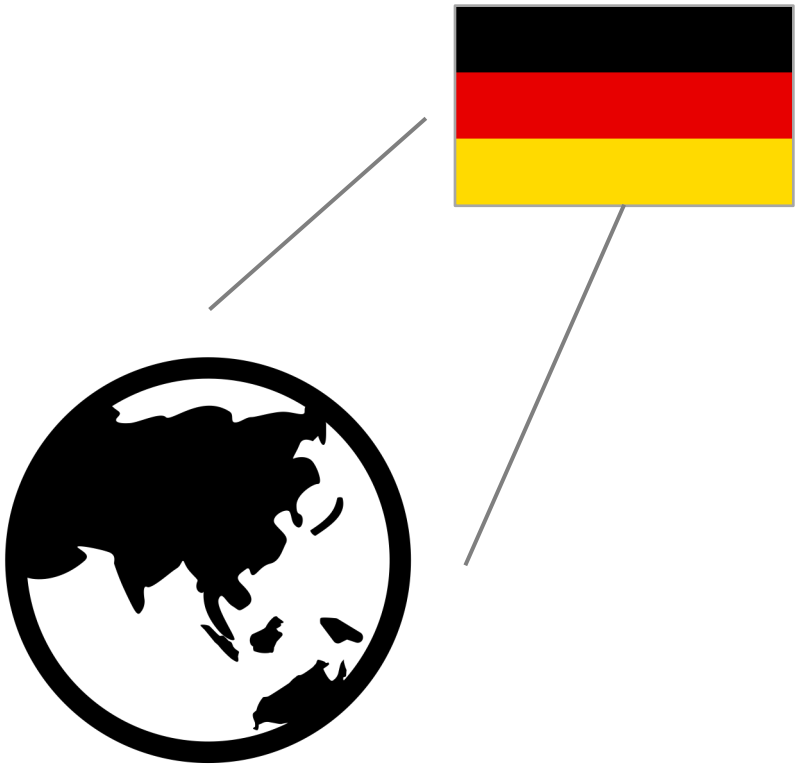


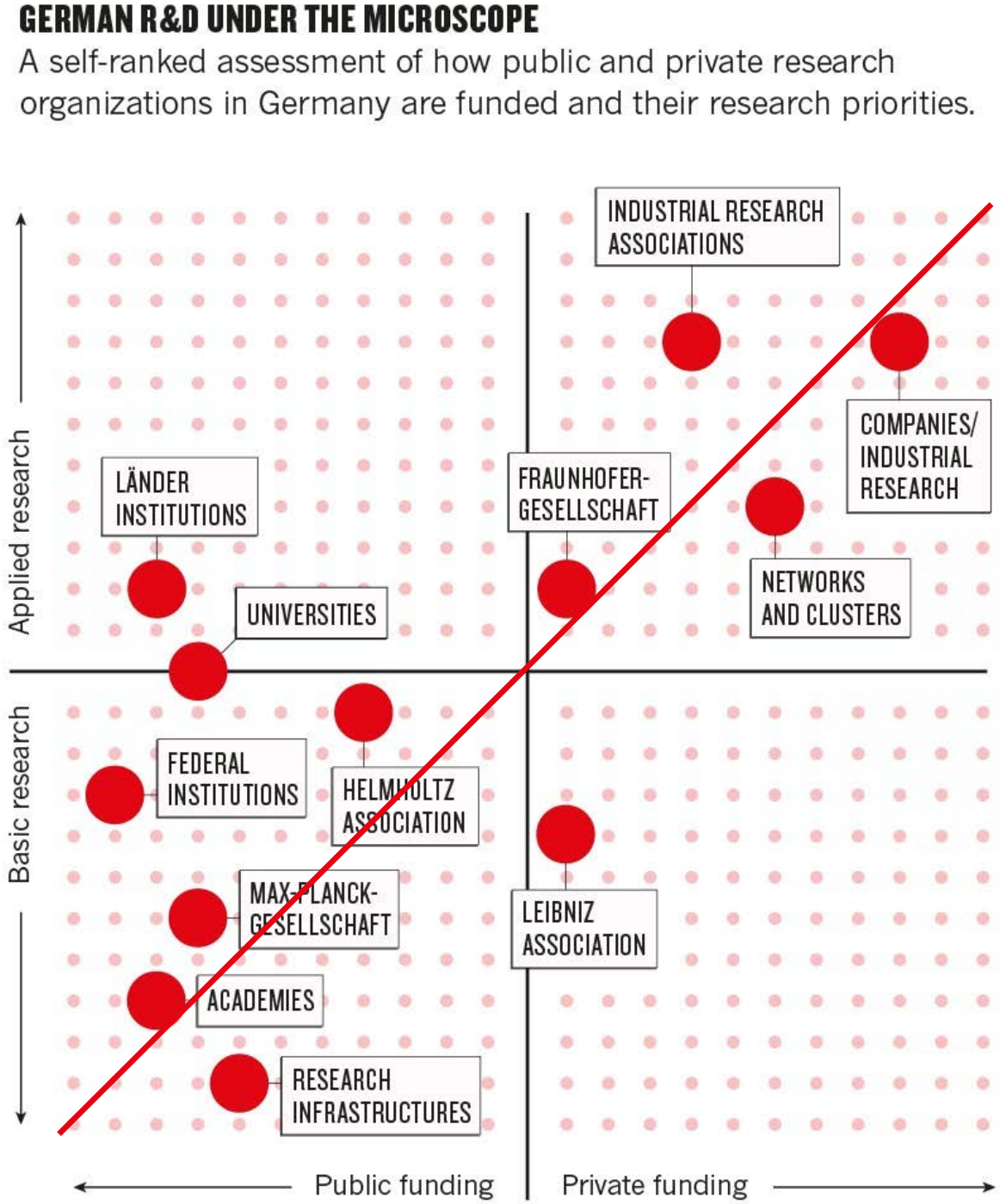
Clarivate™

Source: National Science Foundation, National Patterns of R&D Resources survey data series, available at http://www.nsf.gov/statistics/natlpatterns/. Constant-dollar conversions based on GDP deflators from Budget of the U.S. Government FY 2020. FY 2016 and 2017 data is preliminary.

German R&D map

Public vs private

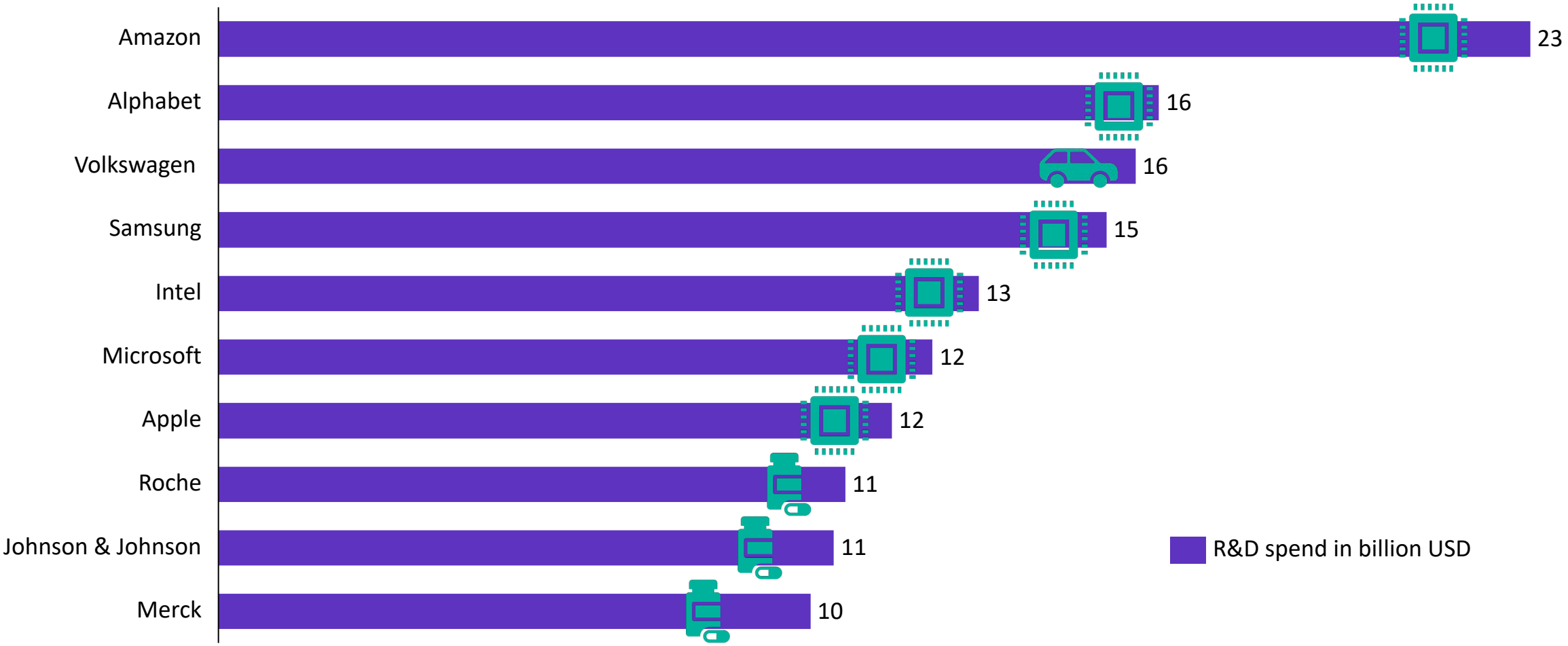




Nature 567, S34-S35 (2019)

Is research related to Economy?

Top companies in R&D spend



Source: Statista

Is research related to Economy?

R&D in artificial intelligence

amazon

KIVA Systems

amazon.com

$775 million

Click to ship

70min

15min

Increase 50%

39B USD

Global R&D spend

Source: McKinsey & Company

Is research related to Economy?

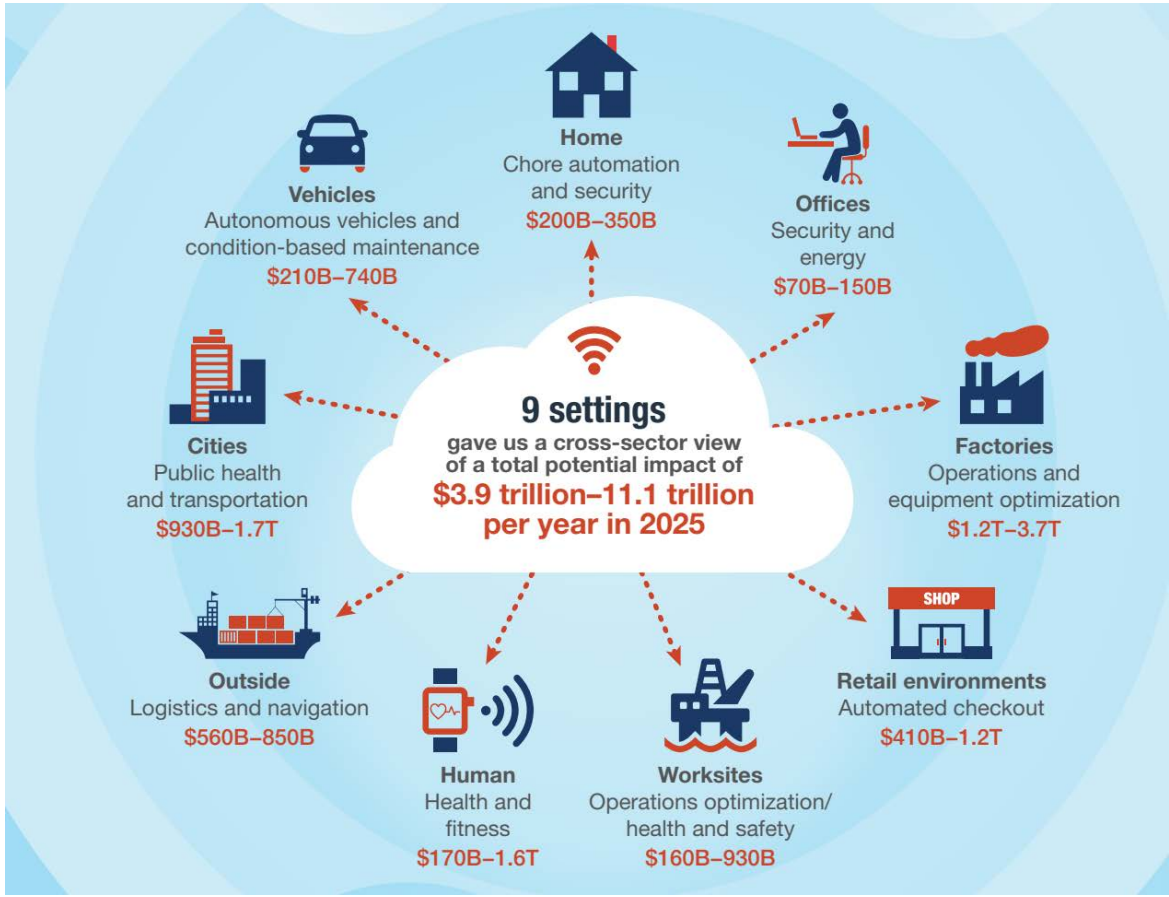
R&D in Internet of Things

745B USD

Global spend including R&D 2019

14.2B

Connected Things



Source: McKinsey & Company

Is research related to Economy?

R&D in 5G

60B USD

Global R&D spend 2019

1B USD

Expected Revenue 2020

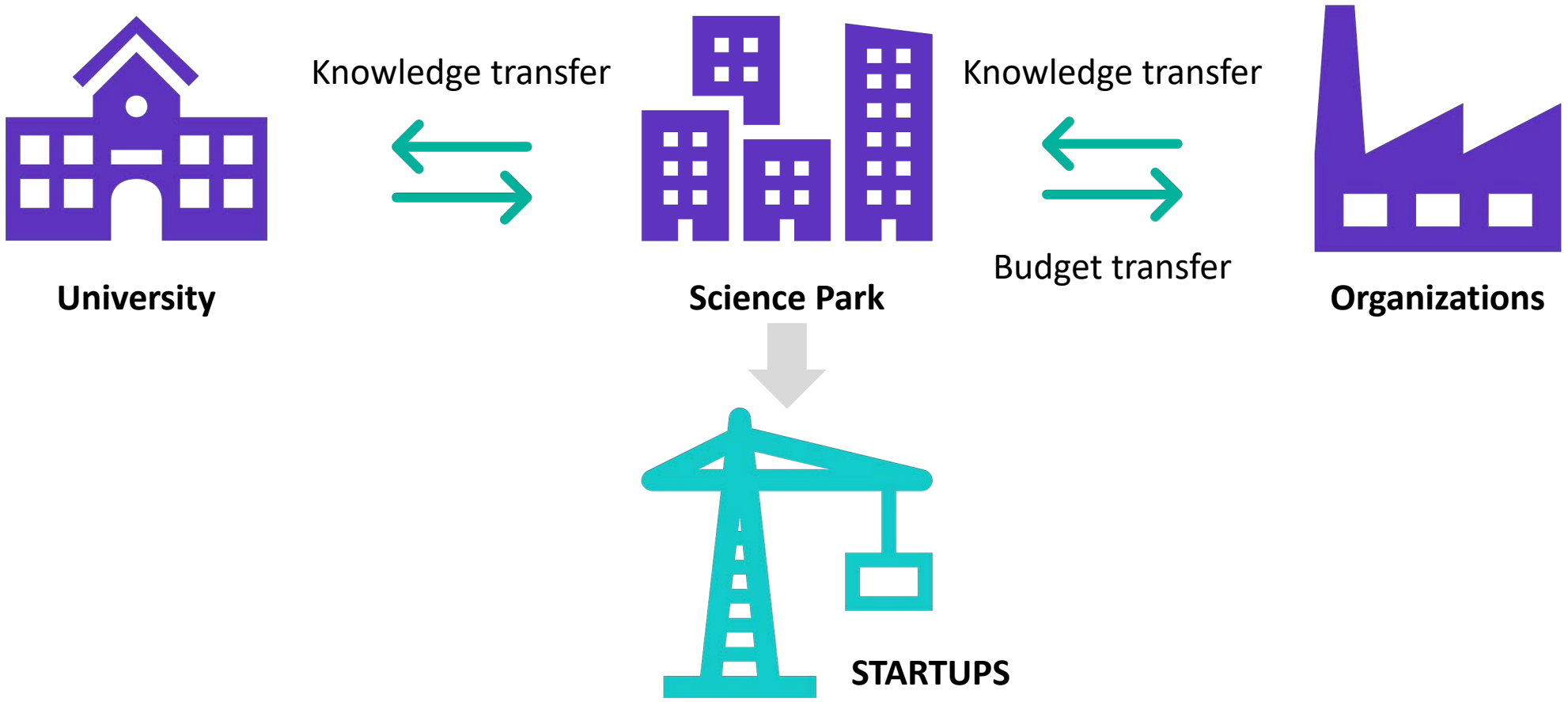
300B USD

Expected Revenue 2025

Clarivate™

Science Parks

Building knowledge-based businesses



Why science parks?

JKU Science park

Global knowledge economy

=

New markets, new customers, new companies, new workers

Science Parks

Building knowledge-based businesses since 1950

1951, Stanfórd Research Park
the epicenter of Silicon Valley

1960s, Sophia Antipolis
France

1970s, Tsukuba Science City
Japan

+400 science parks worldwide

Some Benefits of Science Parks

Building knowledge-based businesses

Boost regional and national economies

Top notch infrastructure

Provide Abundant Space for Growth

Recreation, collaboration … creativity

access to a wide variety of education, training and mentoring resources

Security and intellectual property protection

Output and outcome

In a funding context, the concept of "value" is usually reduced to three letters: VFM. This stands for "value for money" and indicates that funders are making an investment and want to see a return

Output and outcome

Funders

Outcomes

Outputs

Researchers

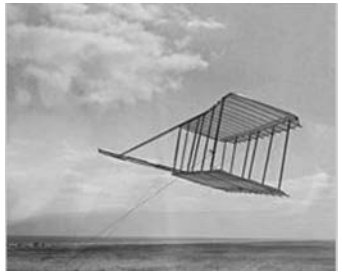
ROI or VFM	Book
Broad interest	Papers
Spread knowledge (open access)	Report to funder
Compete nationally and internationally	Public communication: website, TV, open seminars

Is research related to Economy?

R&D economical importance go back in history

Wright brothers had a successful bicycle business. Used the bicycle business profits to fund their interests in flight

Nowadays, Boeing's revenue is 93.3 B USD as per 2018

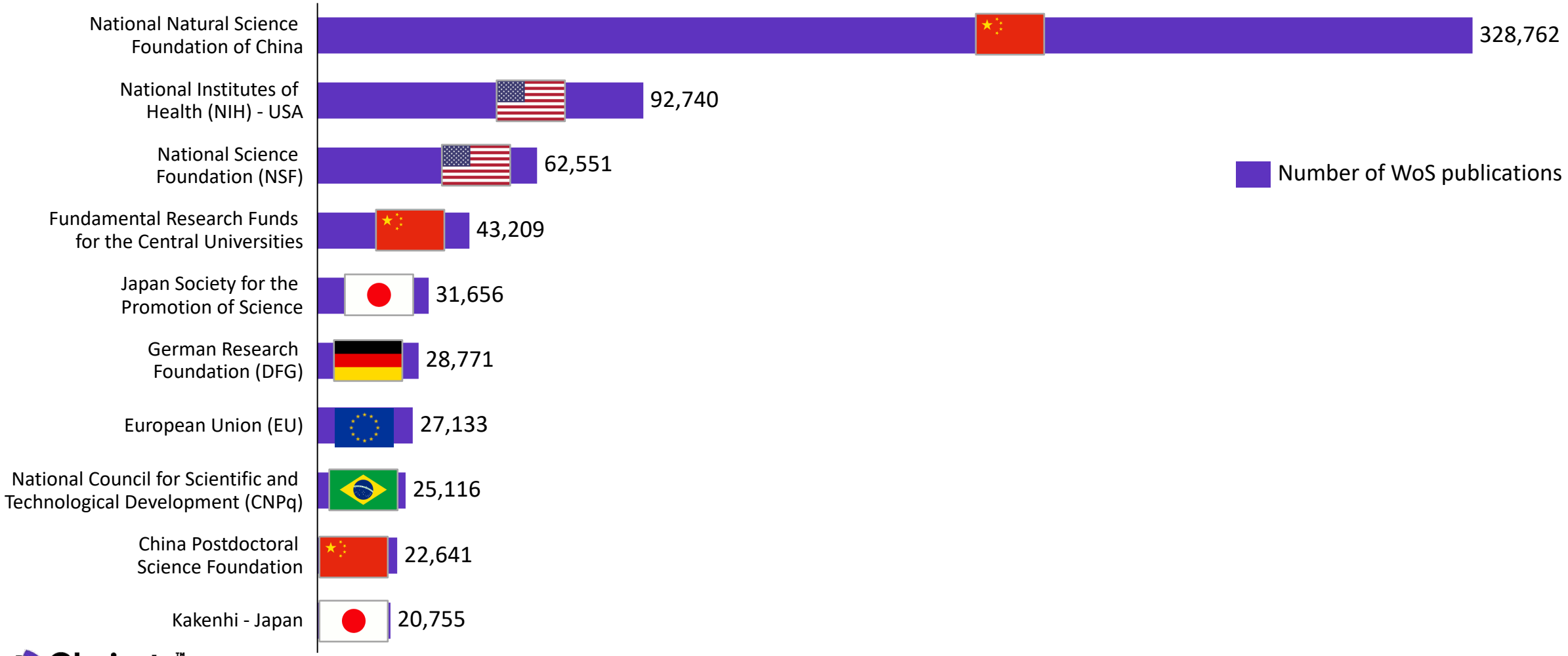


They had zero-governmental funding. Their first pilot project costs around 1000 $

The Dayton Daily News reported the flight on page 9, with agriculture and business news !

Is research related to Economy?

Top research funders in terms of research output



Source: InCites

Grants success rate

NIH grant success rate

Year	Total applications	Awarded	Success rate	Average award	Total funding
2001	21,967	6,965	32%	$304,110	$8,513,561,502
2002	22,212	6,799	31%	324,325	9,362,950,132
2003	24,634	7,430	30%	340,974	10,101,683,116
2004	27,461	6,991	25%	352,214	10,555,849,413
2005	28,423	6,463	23%	361,611	10,685,232,289
2006	29,097	6,037	21%	361,307	10,522,350,609
2007	27,325	6,456	24%	362,970	10,427,770,948
2008	26,648	6,116	23%	373,804	10,429,497,662
2009	26,675	5,924	22%	391,281	10,725,000,910
2010	27,850	6,217	22%	403,691	11,125,330,616
2011	28,781	5,380	19%	408,594	10,975,655,055
2012	29,626	5,436	18%	419,321	11,021,860,936
2013	28,044	4,902	17%	405,874	10,174,867,296
2014	27,502	5,163	19%	431,177	10,359,458,392

Research Grant Proposal: General Guidelines form A to Z

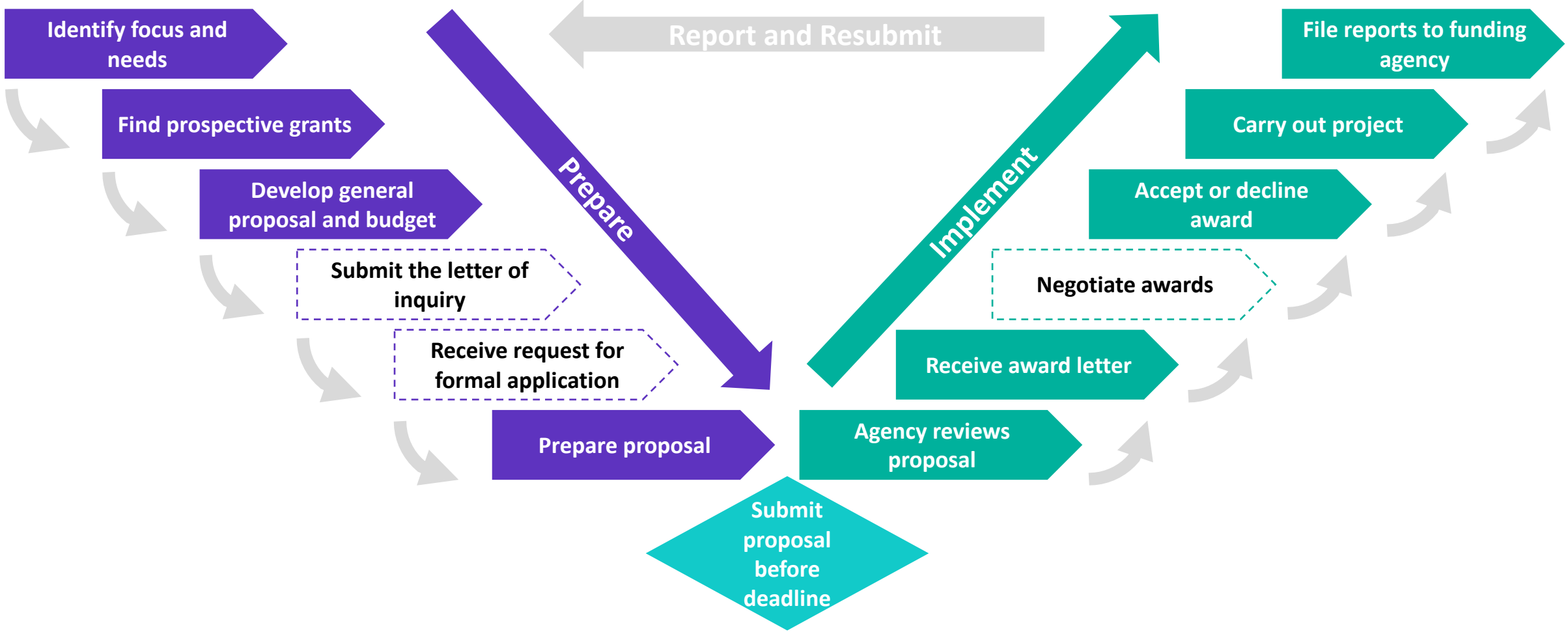
Learning how to sell and communicate your ideas is an essential skill for scientists

A. H. Schmaier, leading scientest

"A grant application is not science; it is the marketing of science."

The lifecycle of a grant proposal

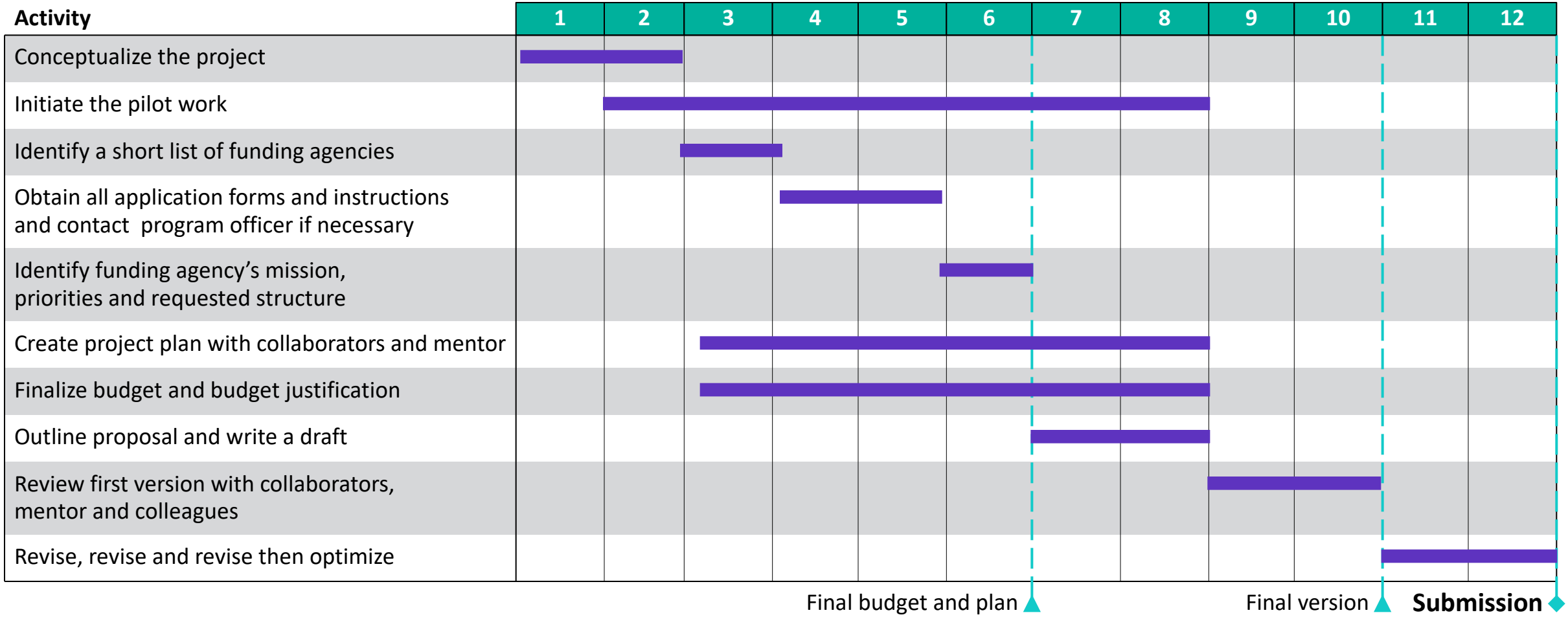
Submitting an outstanding proposal requires careful planning



https://writingcenter.unc.edu/tips-and-tools/grant-proposals-or-give-me-the-money

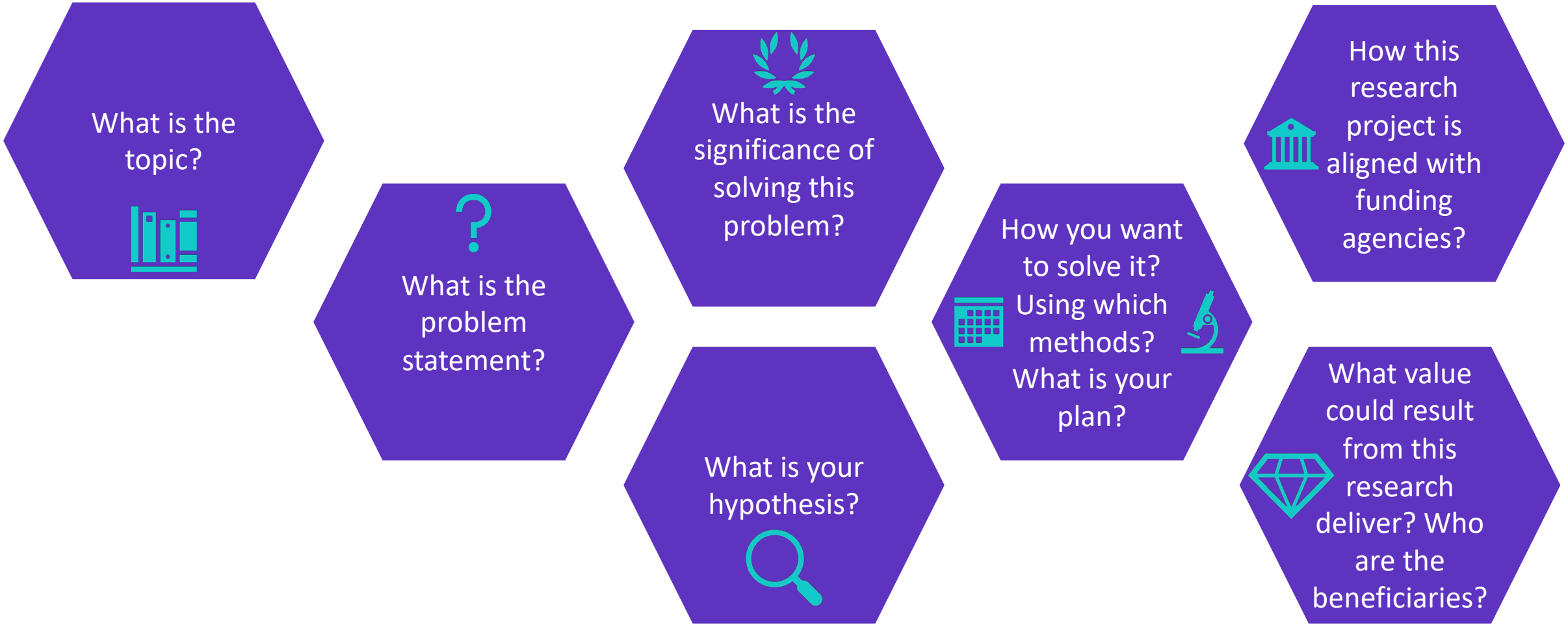
Timeline for preparing and submitting a research grant proposal

Submitting an outstanding proposal requires careful planning



Conceptualize the project

Submitting a winning proposal requires a thoroughly conceptualized project



Conceptualize the project

Where to start from? Submitting a winning proposal requires an outstanding research idea

1

What is the current state-of-the-art?

2

What are the top ten researchers in the field doing now?

3

What are the key research issues in the field?

Brand New & Significant Idea

Identify focus and needs

Conceptualize the project

Criteria of a proposal winning research

Not done before

Significant

Reasonable probability of success and feasible

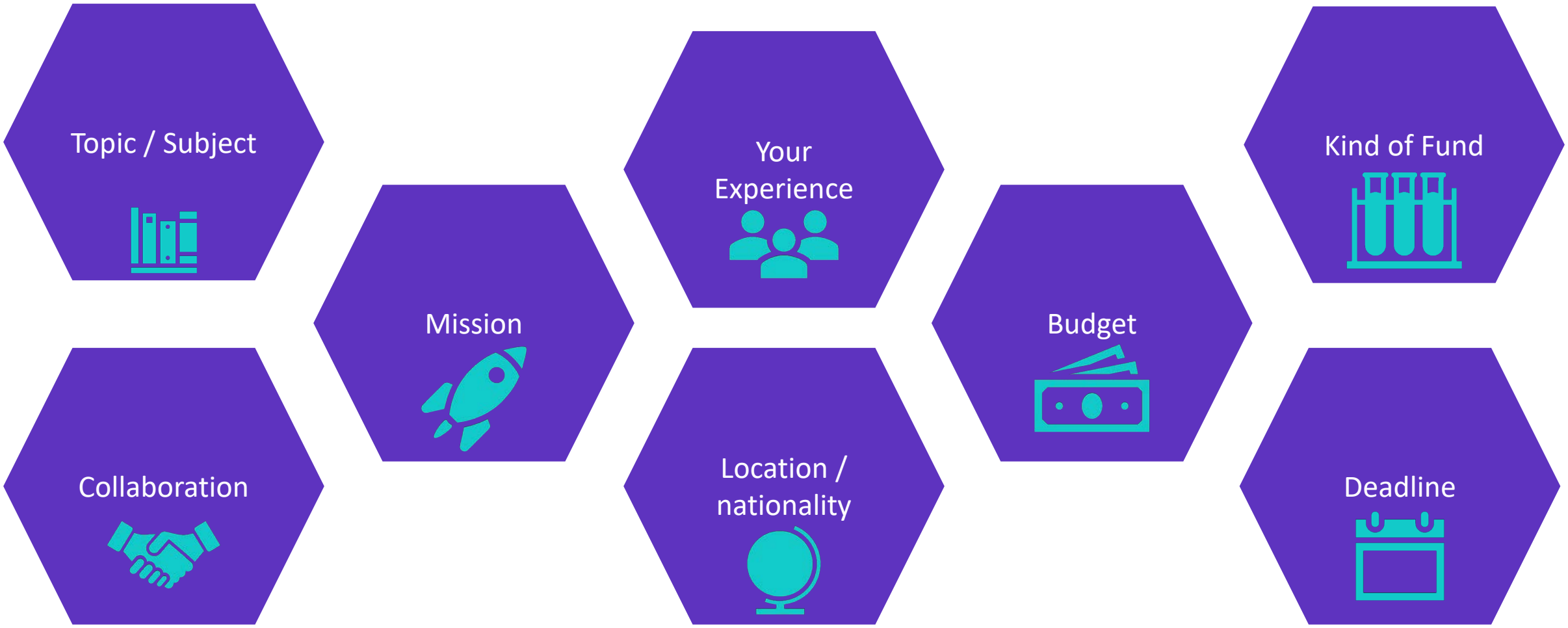
Adheres to scientific method

Well planned

Clarivate™

Identify a short-list of granting agencies

Your eligibility to a research fund determines the short-list



Identify a short-list of granting agencies

Types of funding proposals

Solicited

Funding Agency

Request for Proposal

White paper

Unsolicited

Funding Agency

General Call

Research Grant Proposal

Identify a short-list of granting agencies

Where to find this funding agency information?

- Grant Proposal Guide
- Topics Supported
- Announcements
- Application Form
- Instructions

Contact program officer

- Be prepared with focused questions: e.g, “I have a new idea about sequestration of atmospheric CO2. Is this within the scope of your program? If not, could you suggest where I might submit this?”
- Listen (you don’t learn by talking).
- Remember that the Program Officer is not the panel (or reviewer)

Identify a short-list of granting agencies

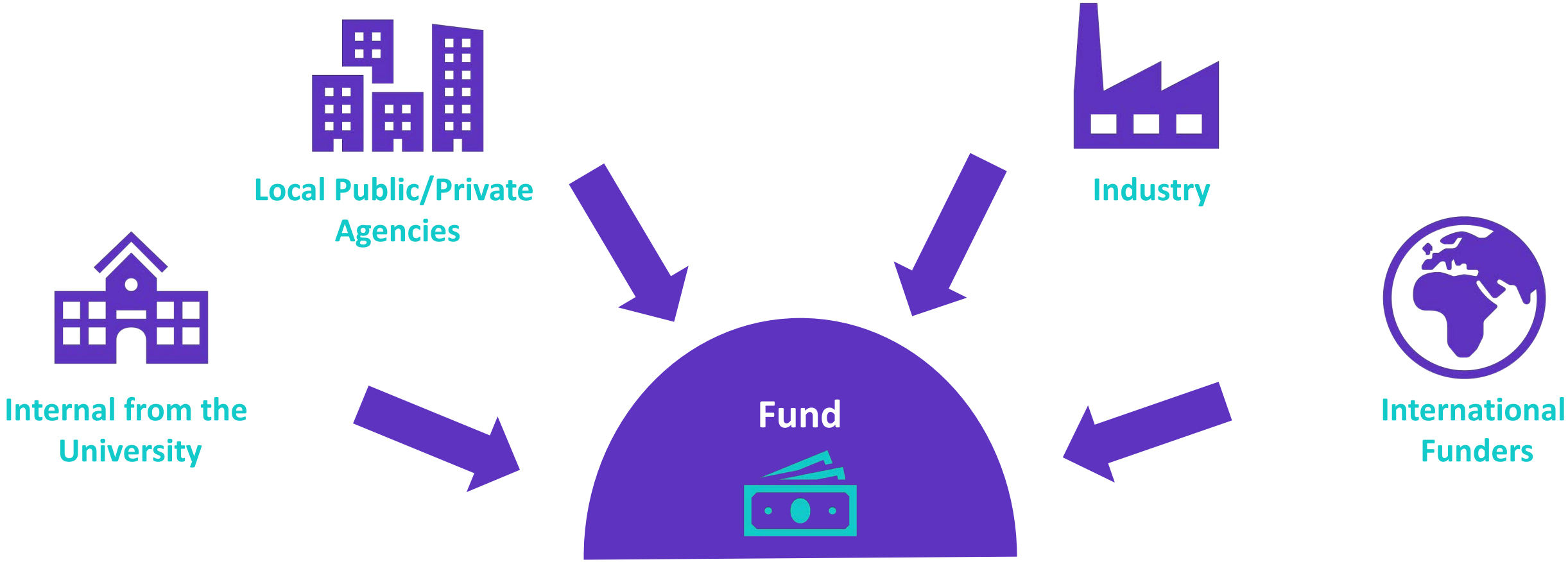
Seven questions **NOT TO ASK** to the program officer

Contact program officer

- Will you fund my research?
- Is this a good research topic?
- What research topic do you think I should work on?
- What are my odds of being funded?
- My proposal wasn't funded; if I resubmit it, what are the chances of success?
- Who are the reviewers?
- If I send a copy of my proposal to you, will you tell me what you think of it?

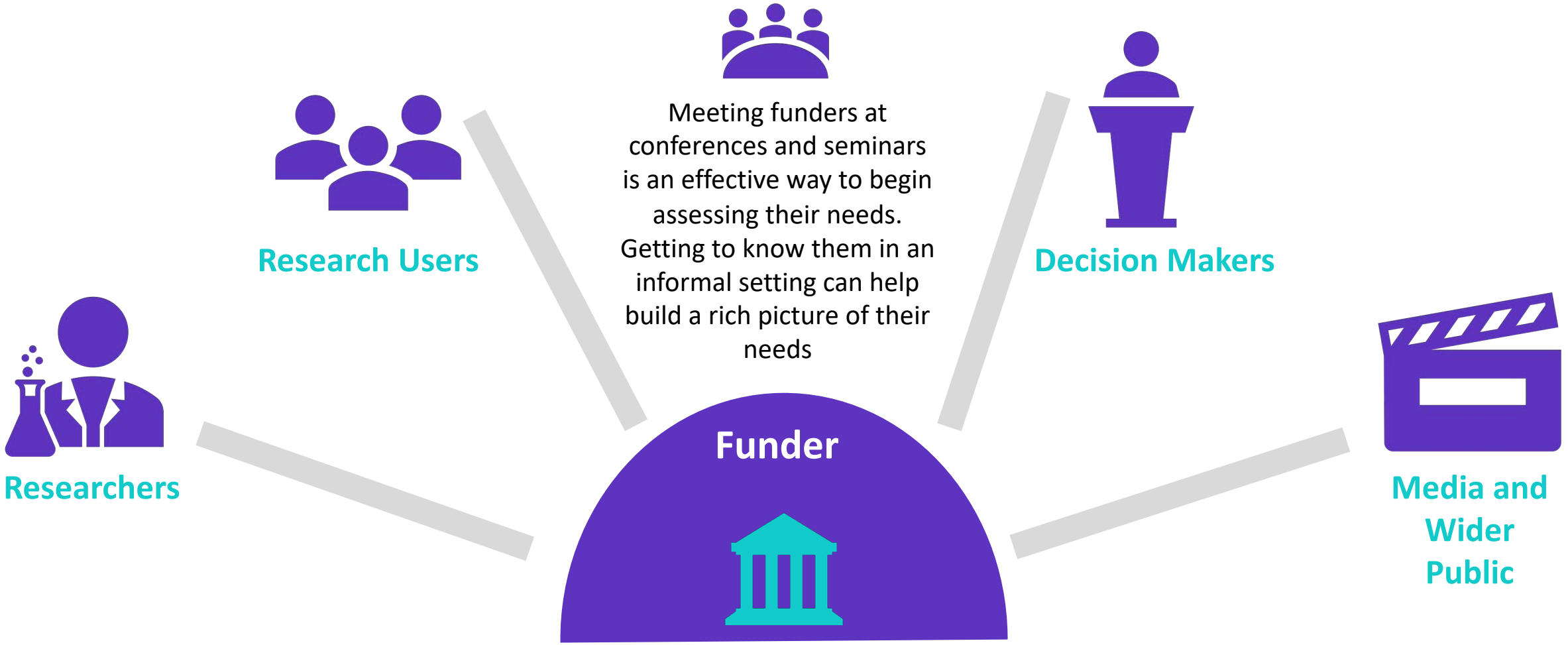
Identify a short-list of granting agencies

Types of funding agencies



Identify a short-list of granting agencies

Funding agencies stakeholders



Before writing the proposal read the instructions carefully

Not following the instructions will result in rejecting your proposal even if you have the best research idea

Page Limit

Reference Format

Minimum Resolution

Word Limit

Submission Method (file type & size)

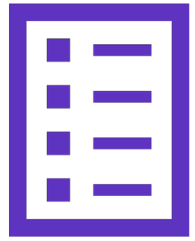
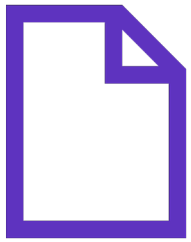
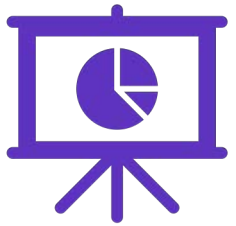


Table of Content



Abstract Format

Font Size

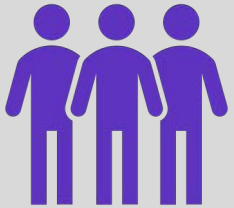


Tables & Figures

Types of reviewers

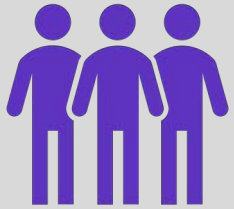
Knowing your audience sets the tone of your proposal

1



Peer Review
(3-5 reviewers)

2



Combination

3

In-House

What reviewers want to know?

Make is as easy and as clear as possible for your reviewer

Primary 10-15

Reviewer (ex. NIH)

Secondary ~100

What reviewers want to know?

Does your proposal illustrate the below topics clearly?

What are your research Objectives?

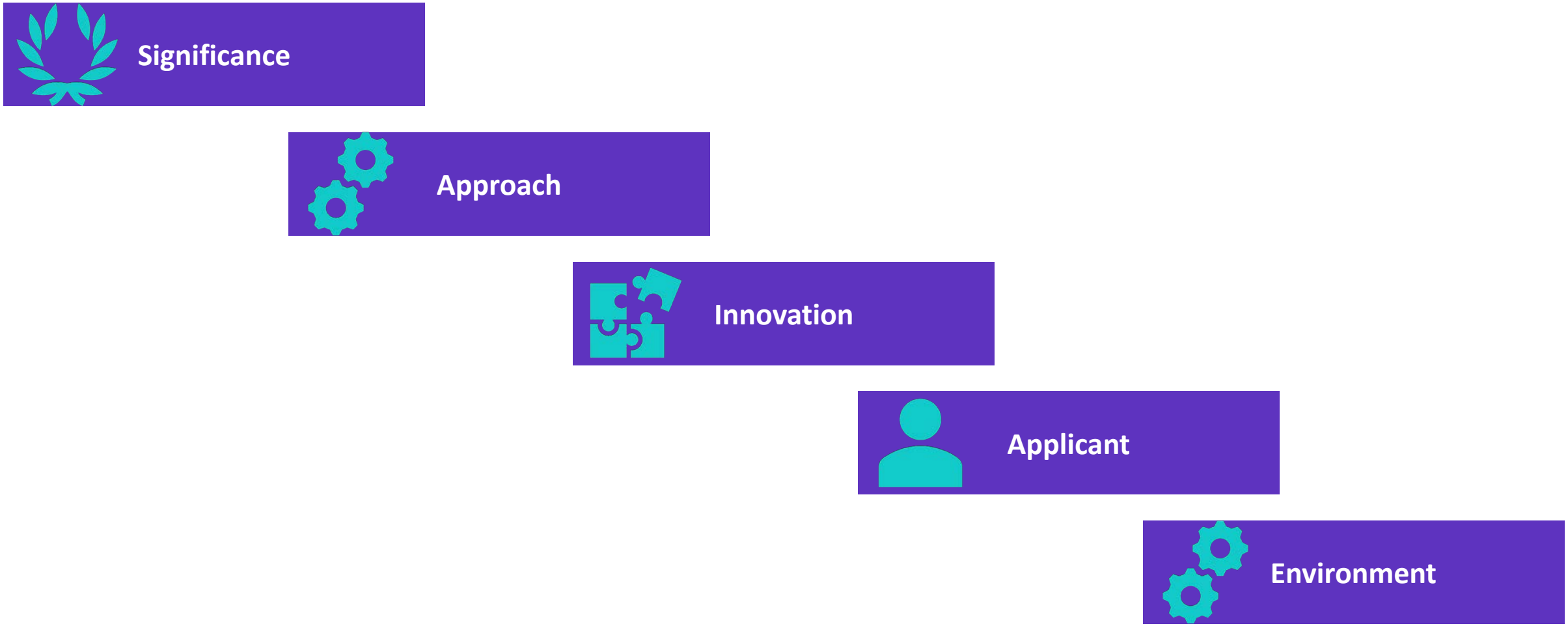
What is your methodology?

Can you do it?

Is it significant and relevant to the agency?

Common Review Criteria

By following these criteria you can review your own proposal or the proposal of your colleague



Reviewer comments

Reviewer comments on uncompetitive proposals

Significance

"This work can certainly be carried out, but it does not address any topic of broad current interest. I would probably not read a paper describing the results."

Approach

"The applicant seems to feel only one outcome of these studies is possible and fails to consider others. If that were true, the studies would be unnecessary."

"Much important information on experimental procedures, and equipment for measurements is omitted. I can't really tell what is going to be done and how."

Innovation

"This proposal is a simple extension of the applicant's Ph.D. dissertation."

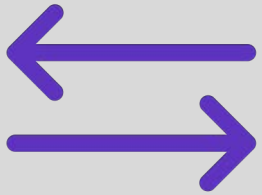
Receive Excessive Feedback

Whom you could ask for a value adding feedback?

Collaborators

Expert in the field

Closely related field



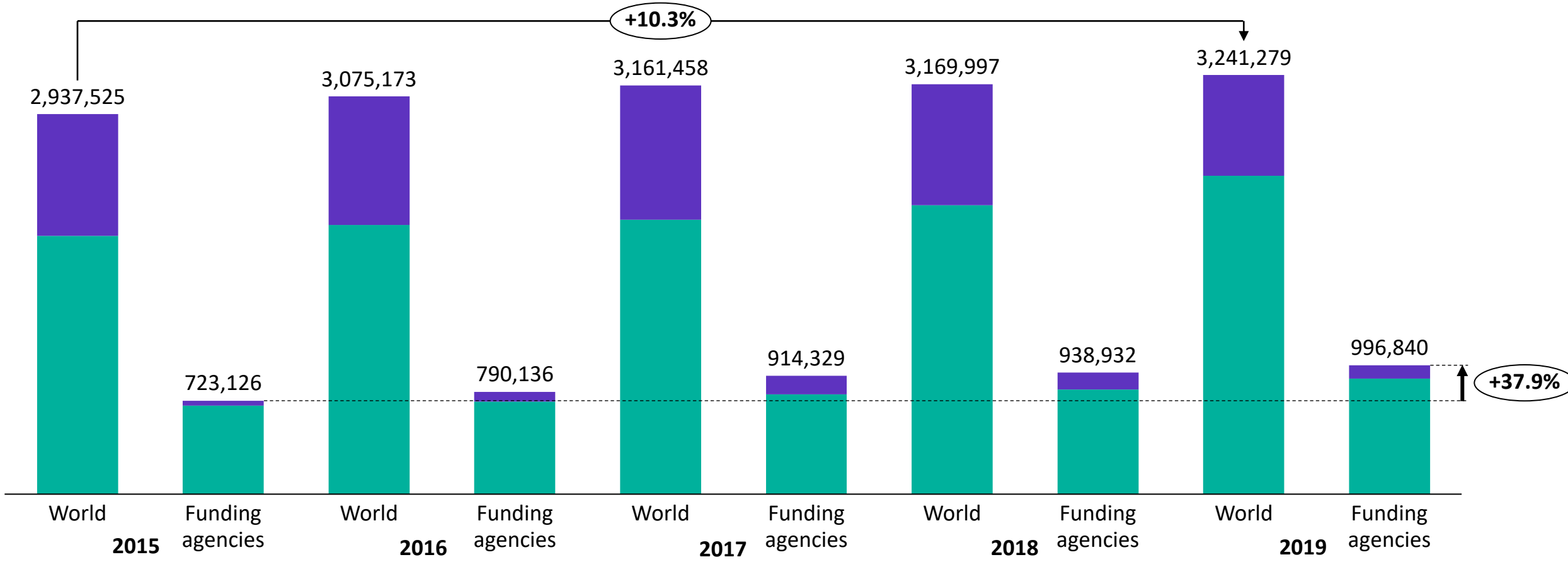
Experienced non-expert

Excellent English Skills

Funding Data in Web of Science

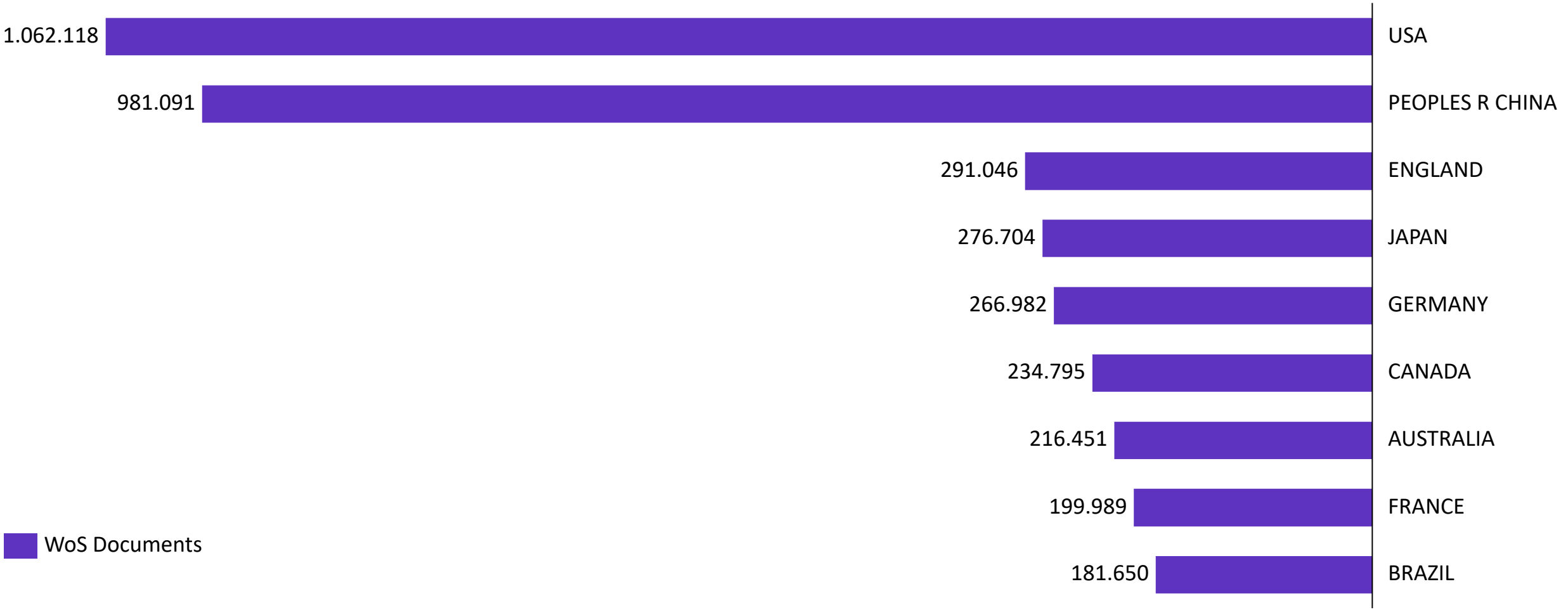
Web of Science and Funding data

Yearly evolution 2015 - 2019



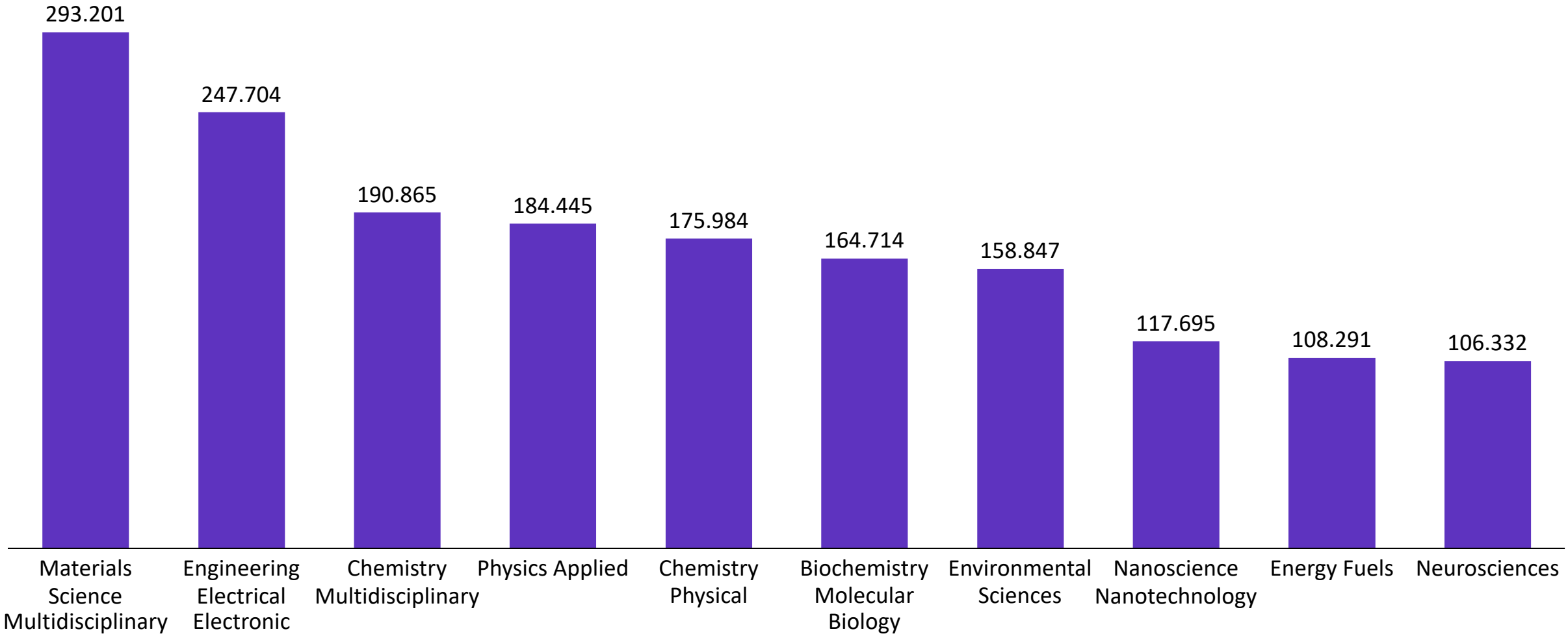
Top 10 Funding data by country

Web of Science Documents 2015 - 2019



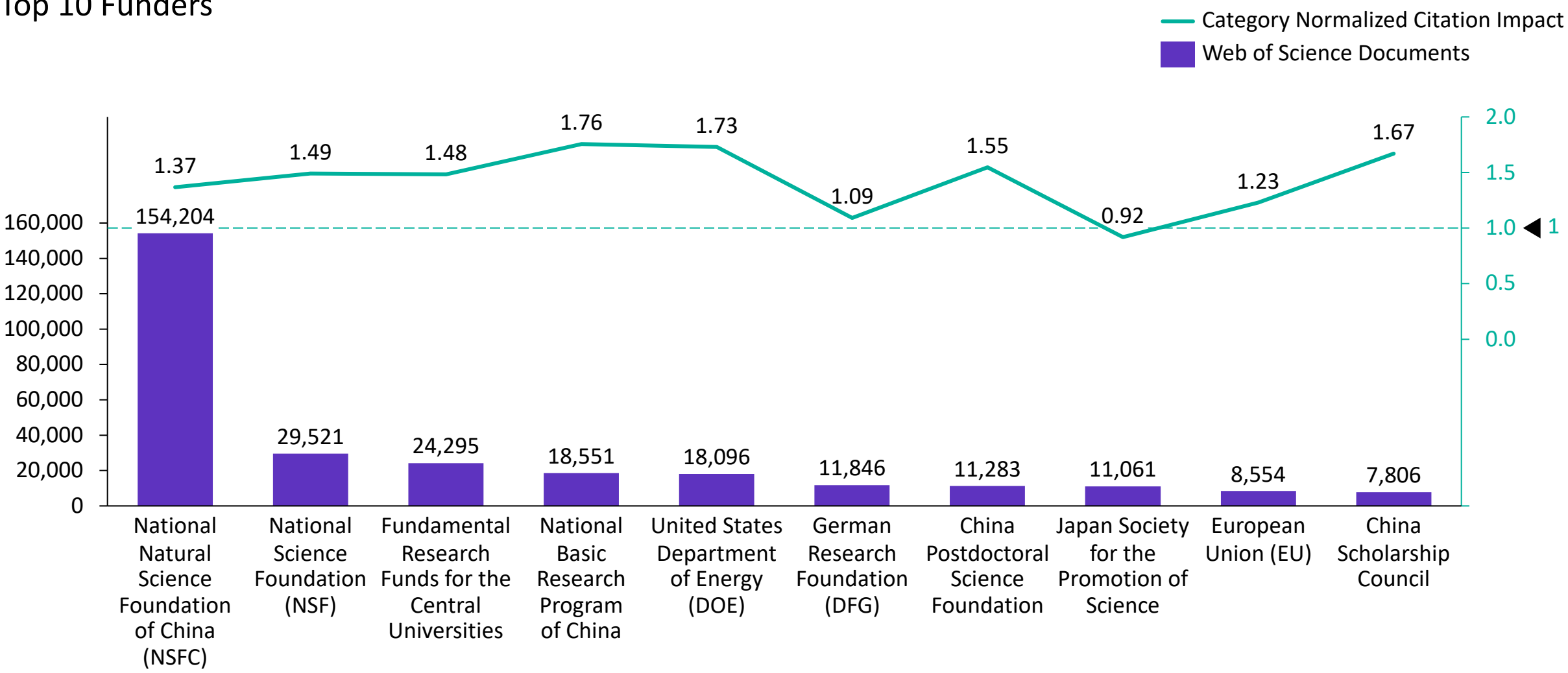
Funding data

Top 10 areas by productivity



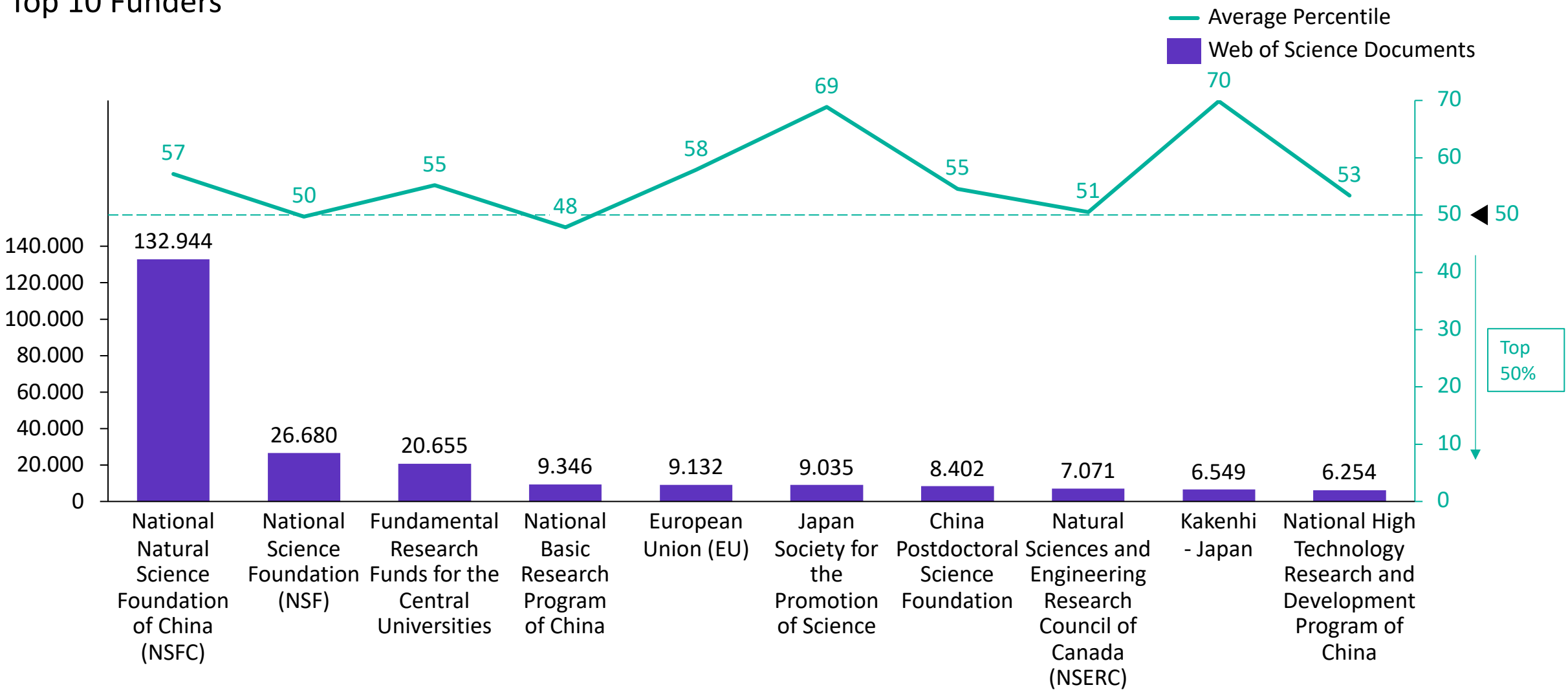
Materials Science Multidisciplinary

Top 10 Funders



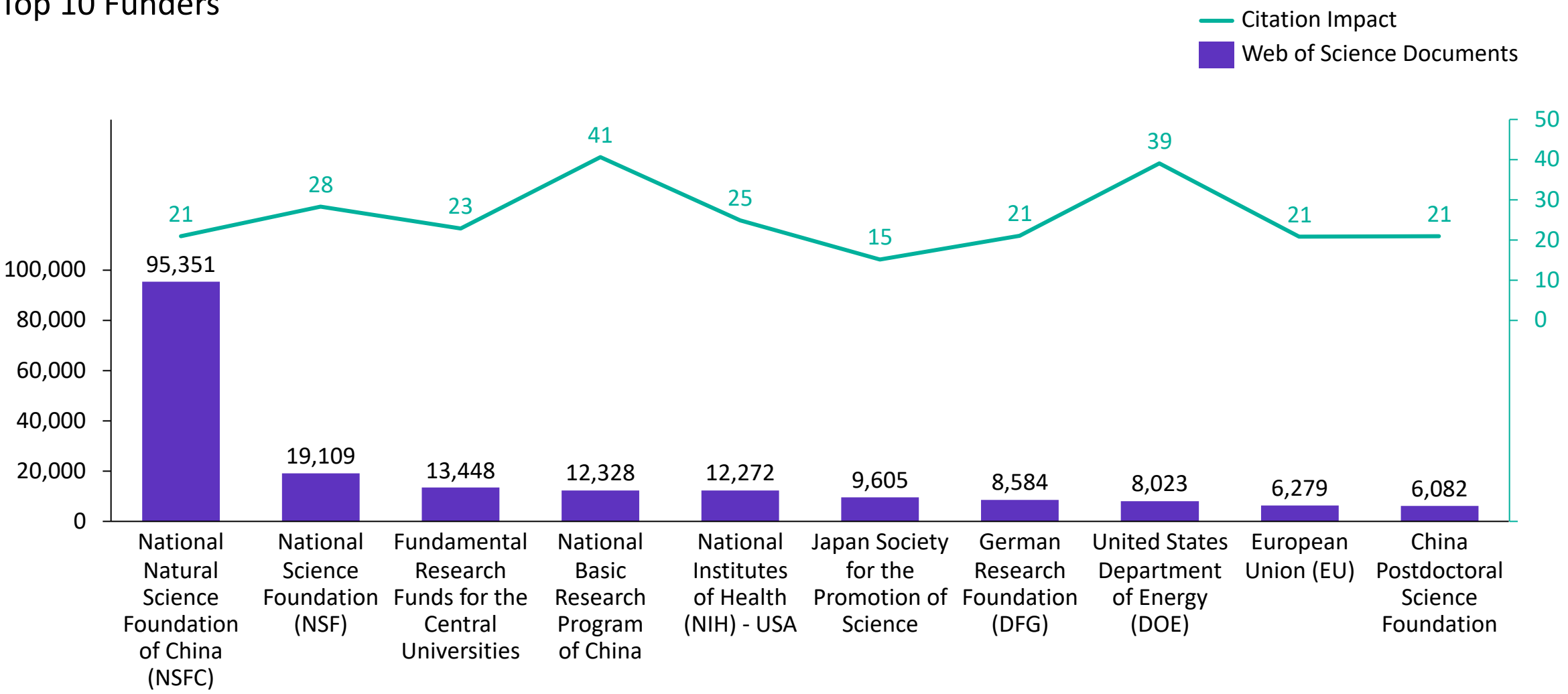
Engineering, Electrical and Electronic

Top 10 Funders



Engineering, Electrical and Electronic

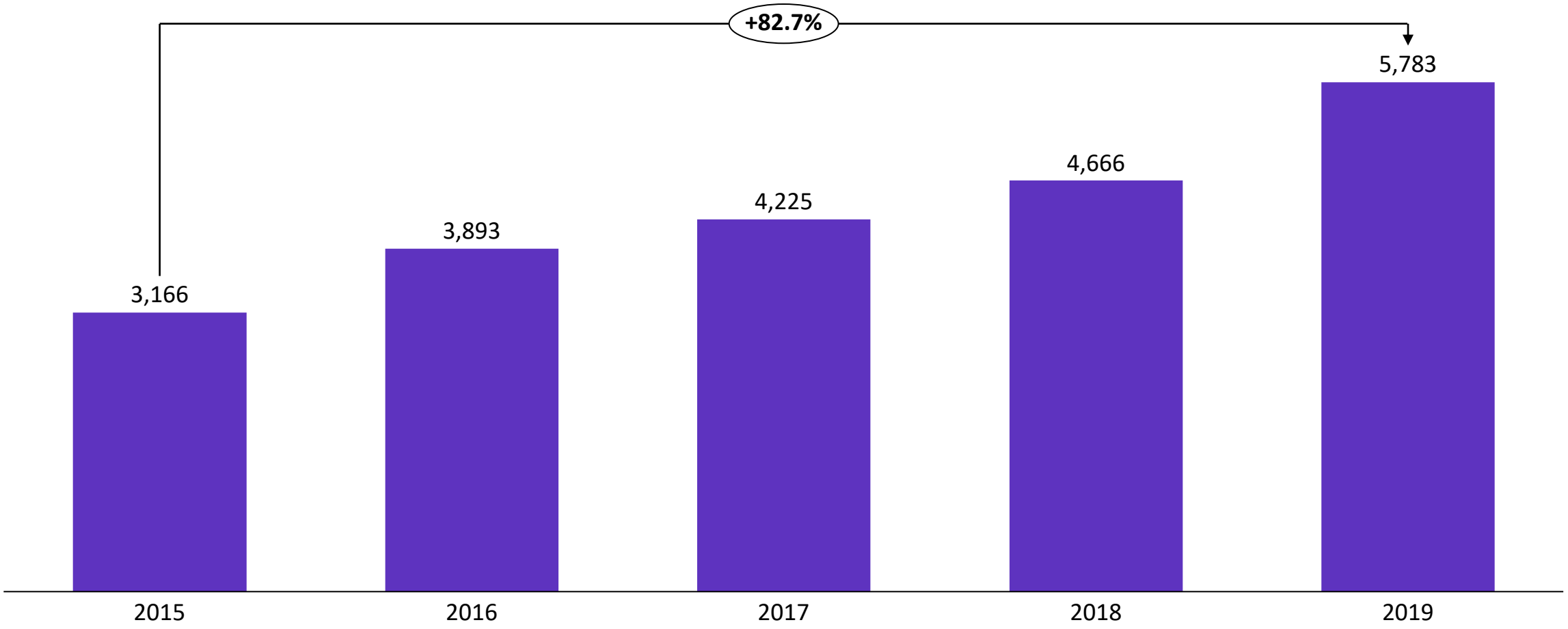
Top 10 Funders



Funding Agencies Overview in Egypt

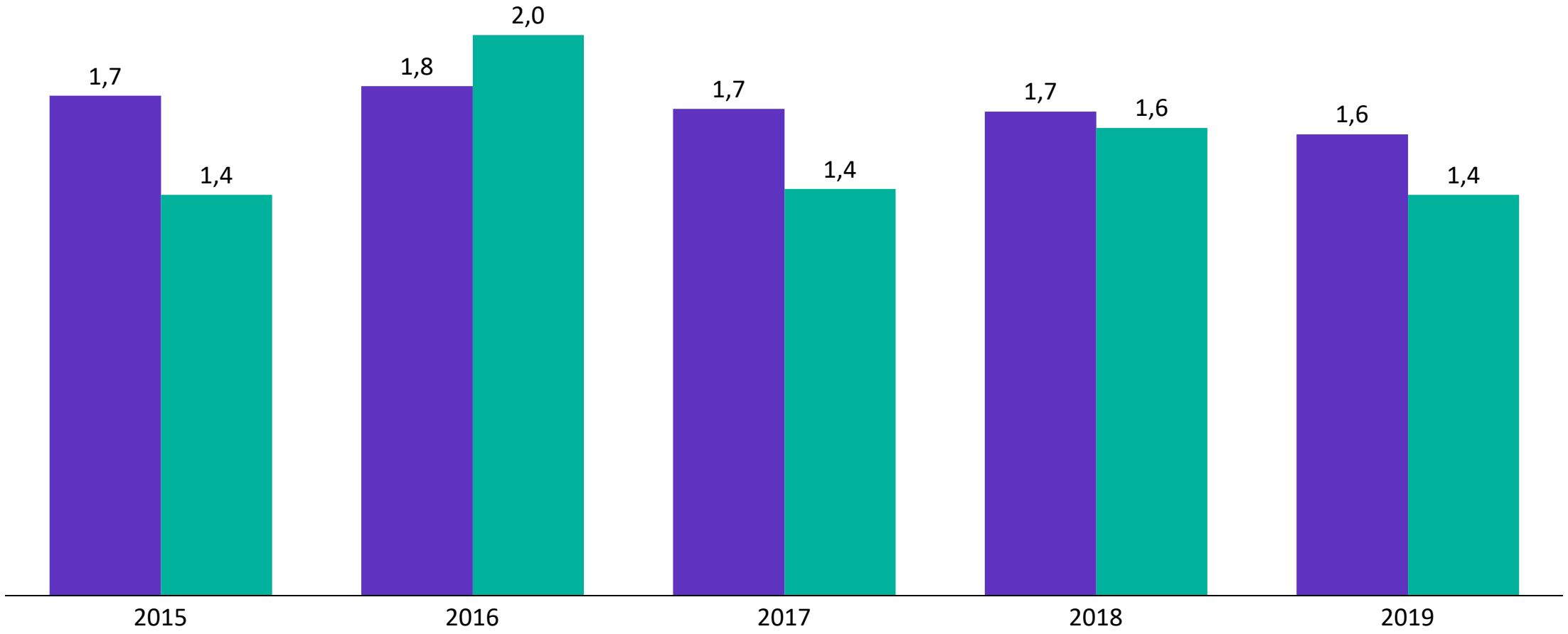
Web of Science publications with funding acknowledgement

Egypt yearly evolution 2015 - 2019



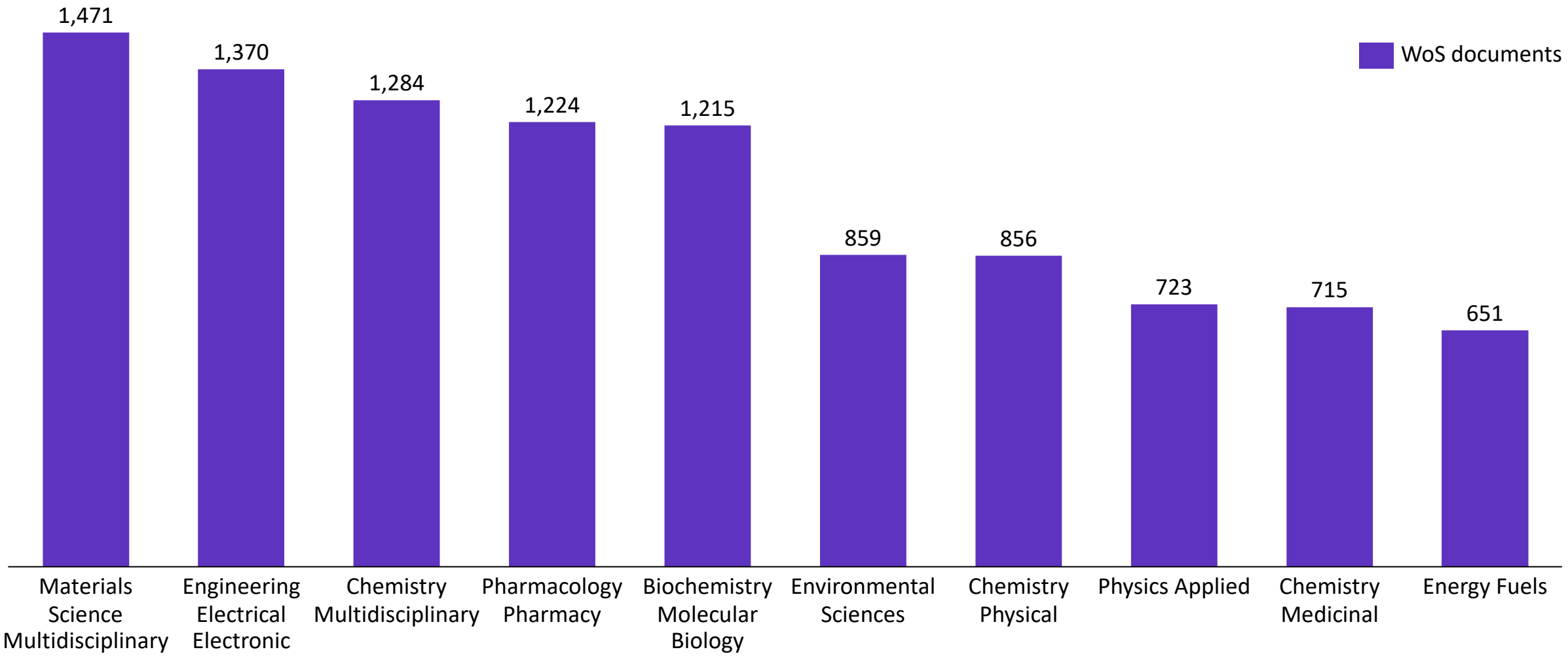
Collaboration with Industry

Percentage of publications with funding acknowledgement and industry collaboration 2015 - 2019



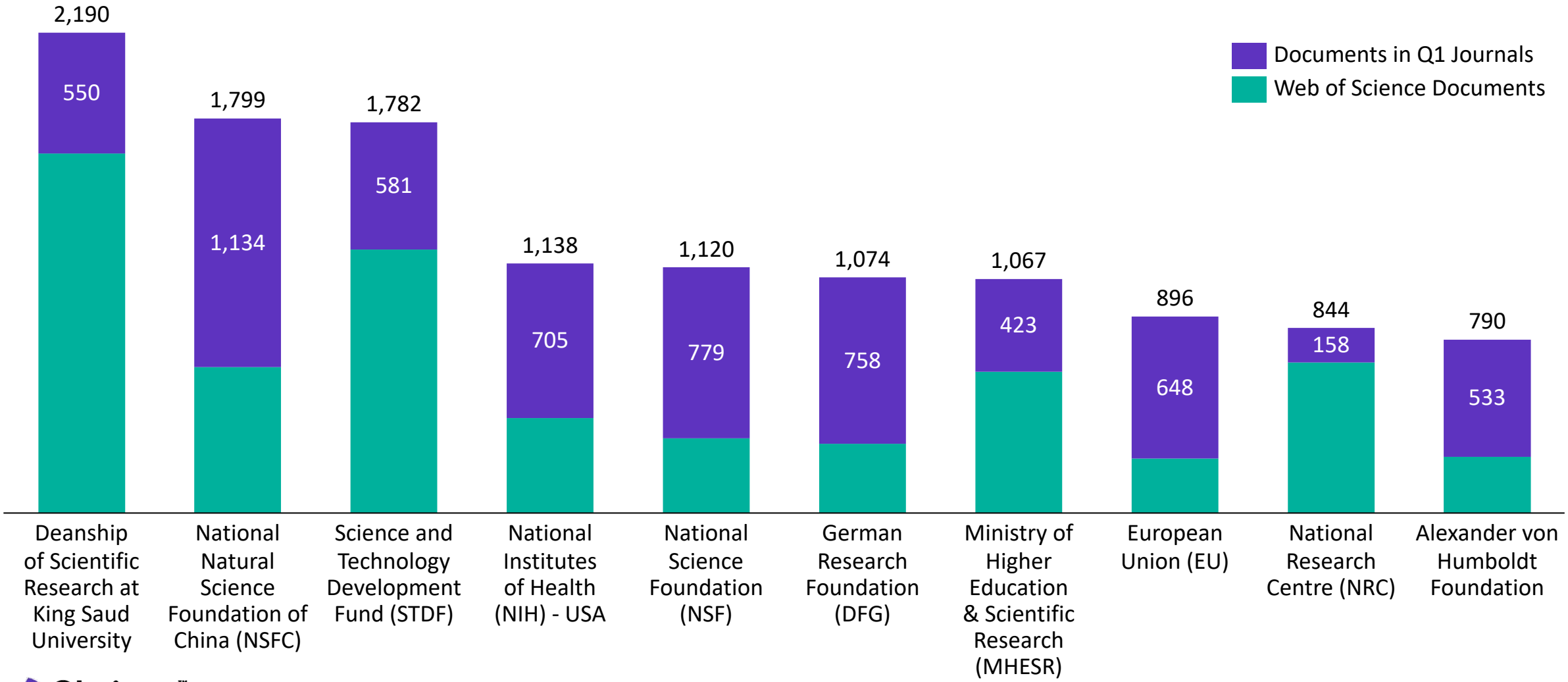
Egypt Top 10 Funded areas

Web of Science Documents 2015 - 2019



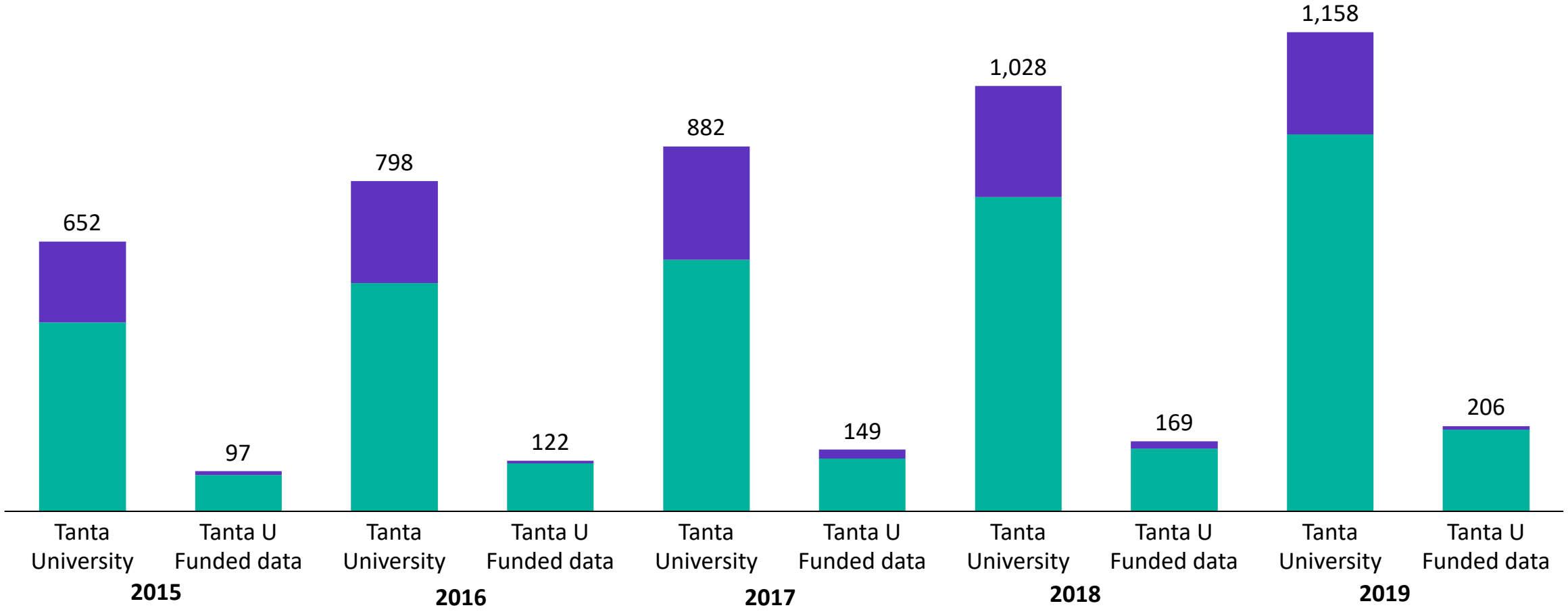
Egypt Top 10 Funding Agencies

Web of Science Documents 2015 - 2019



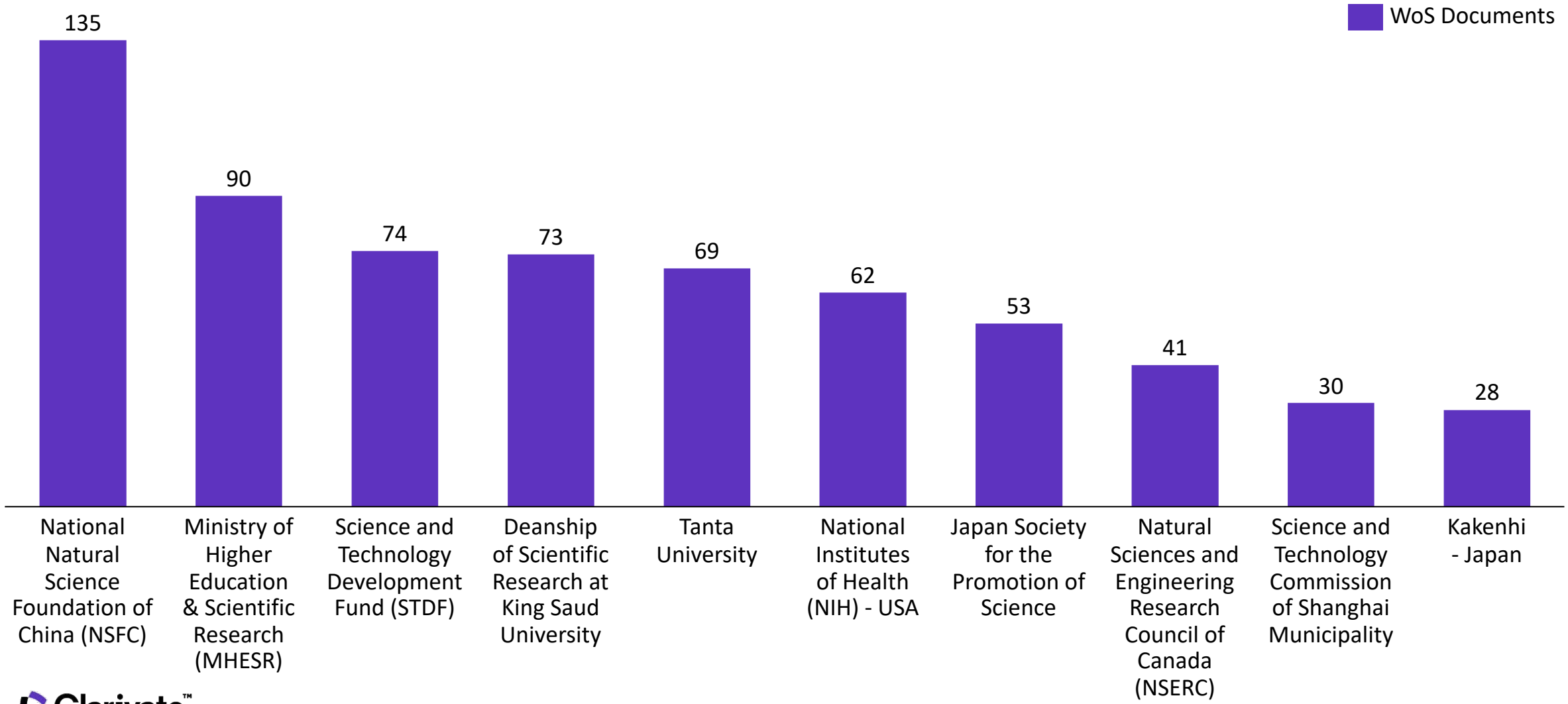
Tanta University funding data evolution 2015-2019

Tanta University Web of Science publications with funding acknowledgement



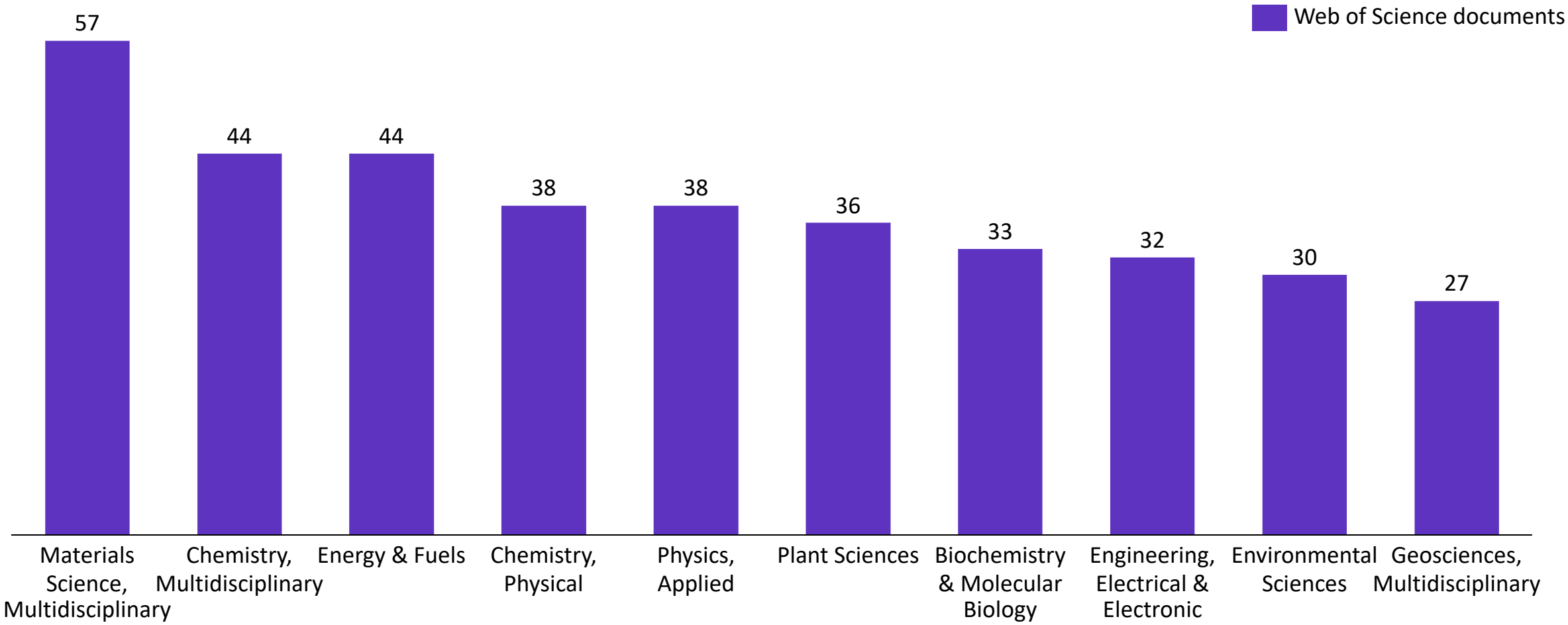
Top 10 Funders at Tanta University

Web of Science Documents 2015 - 2019



Tanta University funding per subject area

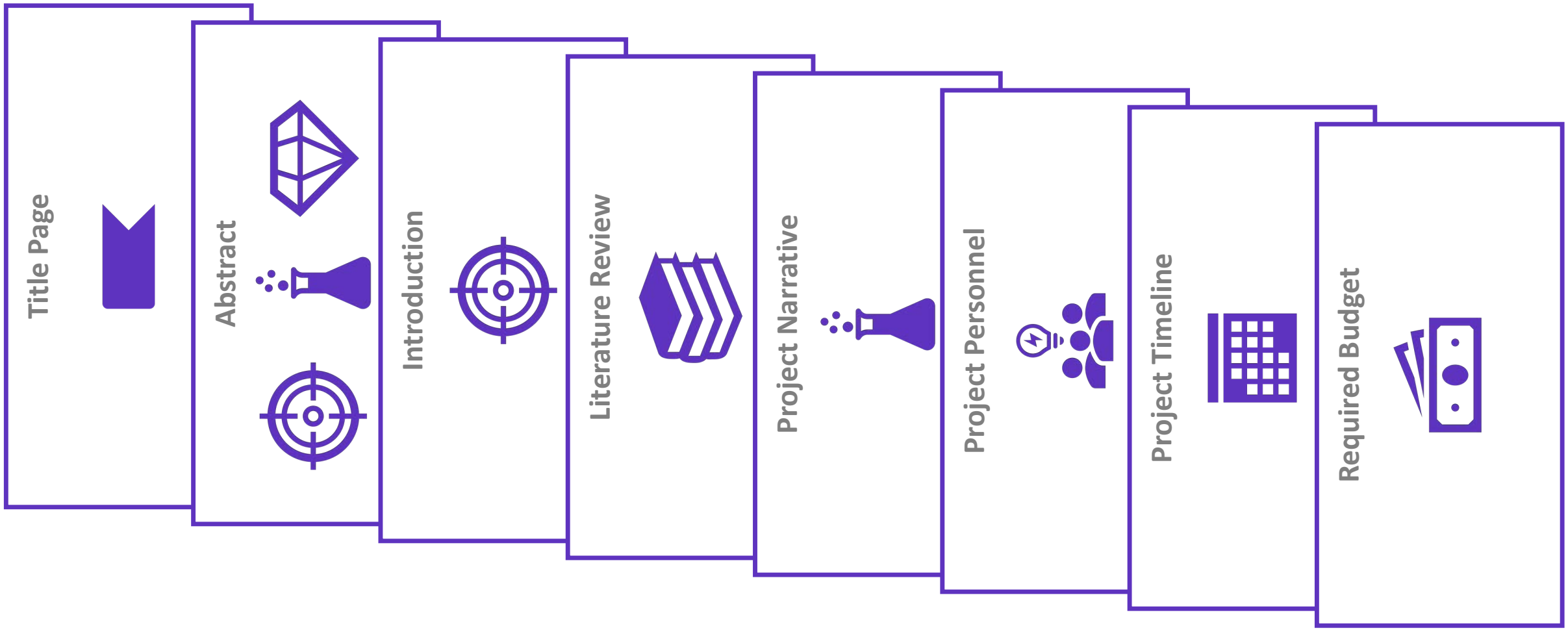
Top 10 funded subject areas per number of WoS publications



Research Grant Proposal: Structure and Writing Tips

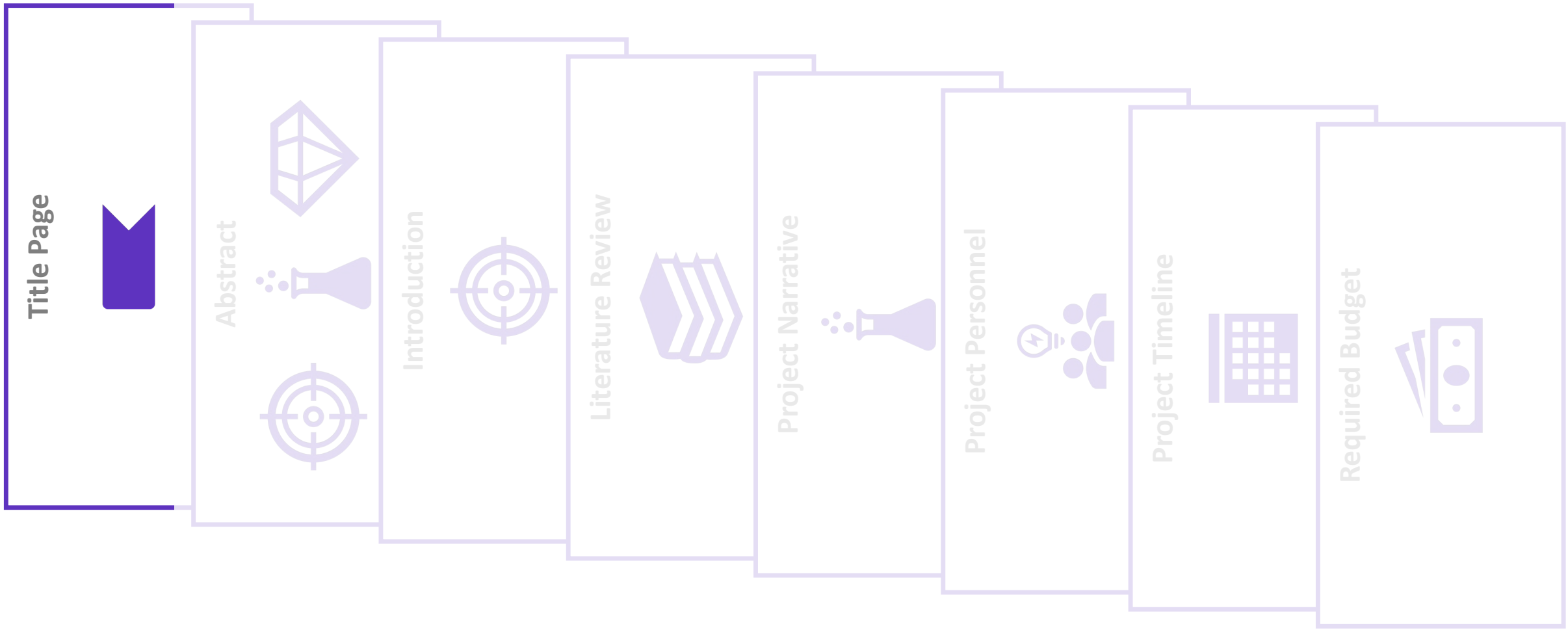
General structure of a research grant proposal

Although each funding organization has their own requirements the below structure and sections are common



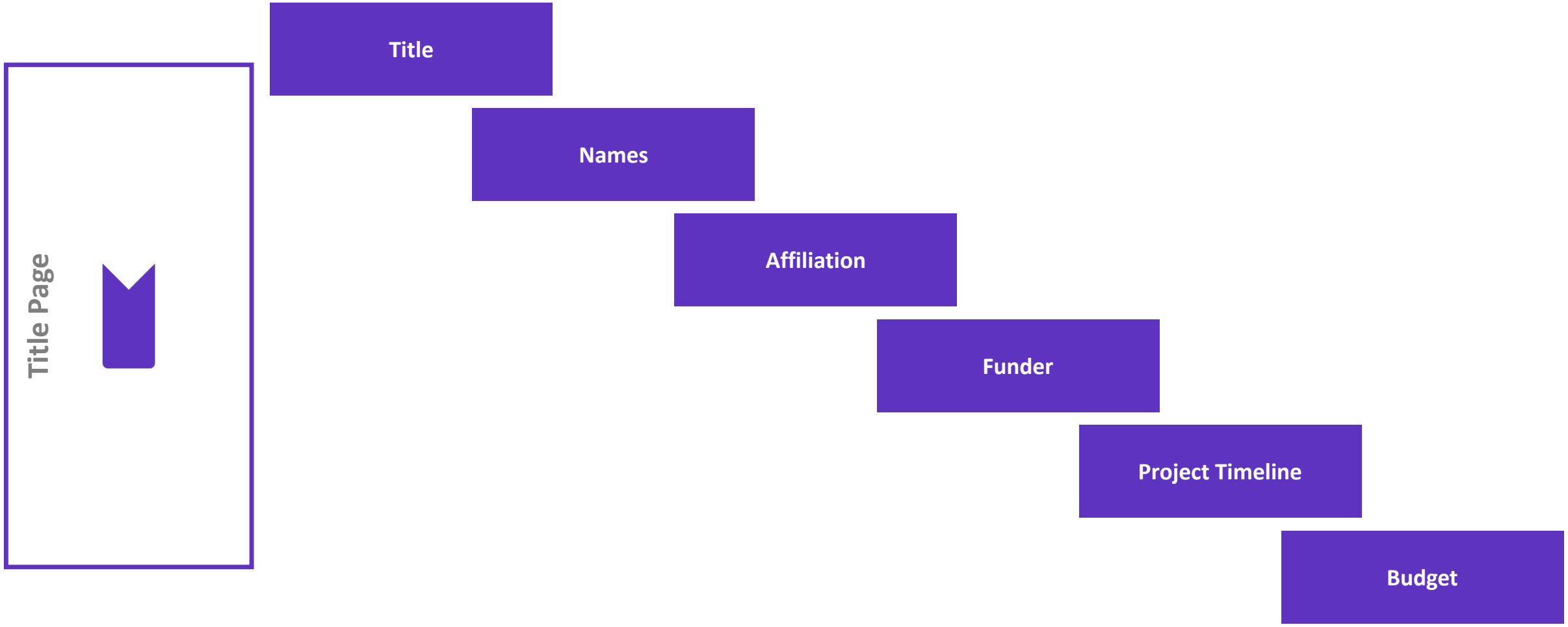
General structure of a research grant proposal

Although each funding organization has their own requirements the below structure and sections are common



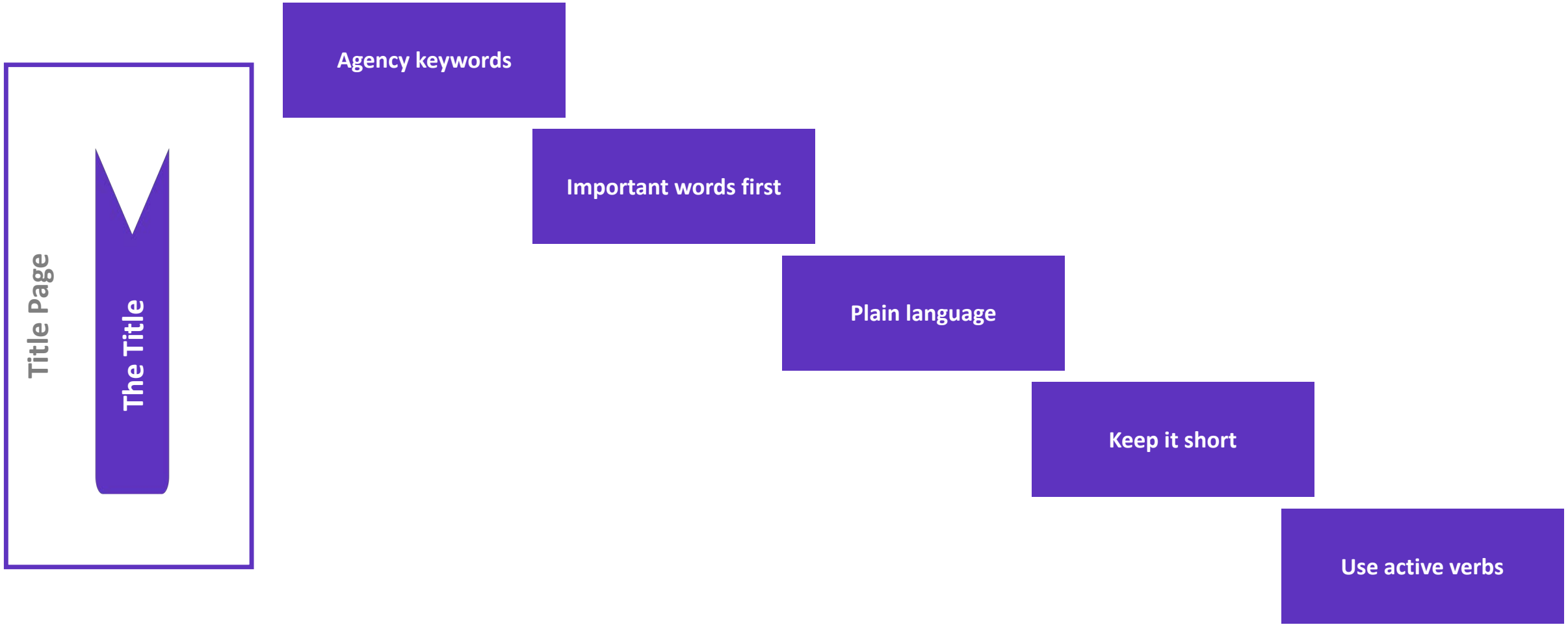
General structure of a research grant proposal

Content of the title page



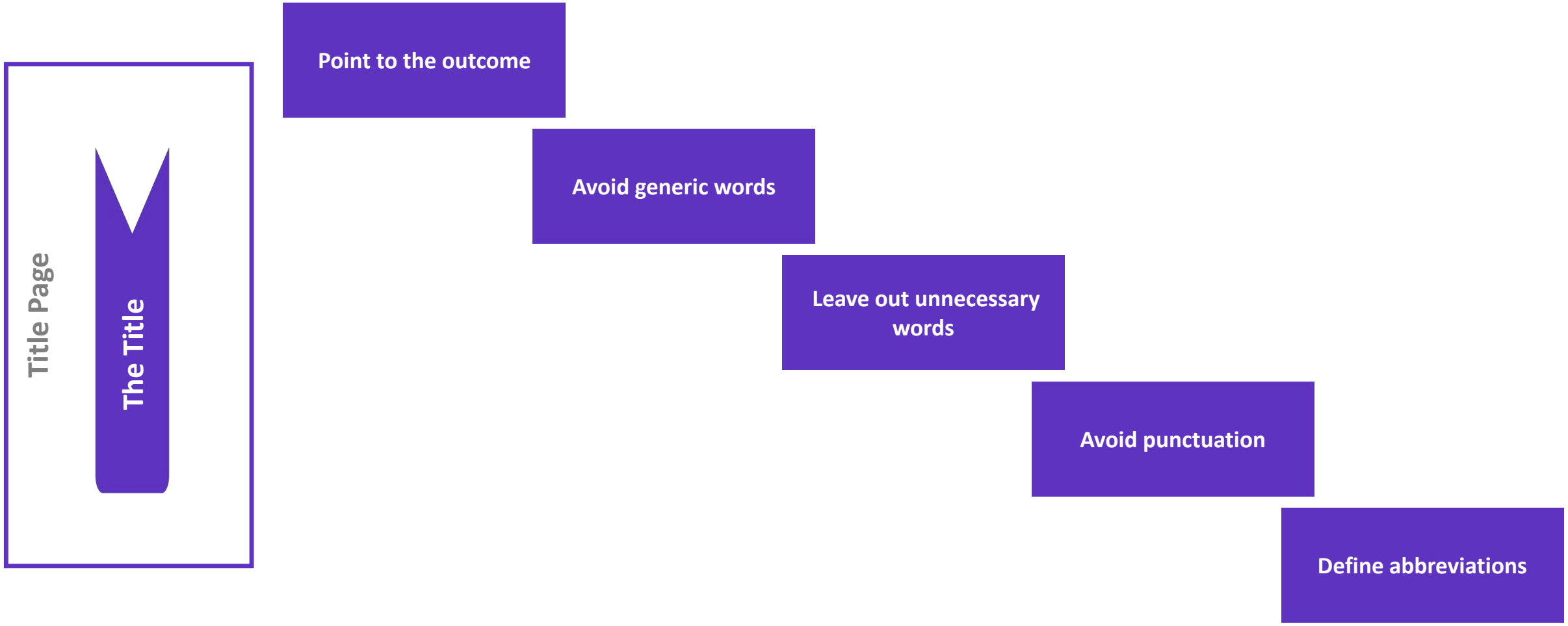
Tips for writing a research grant title (1/2)

The title is your first chance to win over your reviewers with an innovative, creative idea that they will want to champion for funding. It is the first thing a reviewer reads!



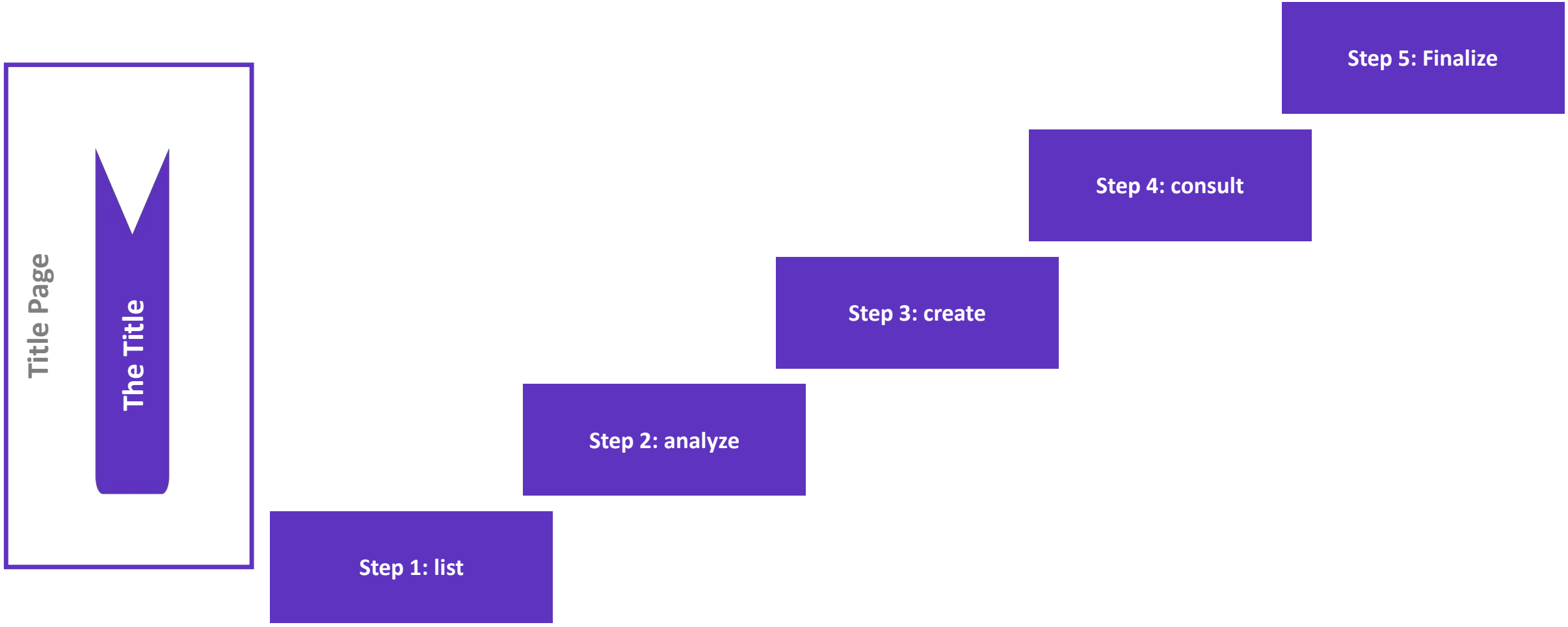
Tips for writing a research grant title (2/2)

The title is your first chance to win over your reviewers with an innovative, creative idea that they will want to champion for funding. It is the first thing a reviewer reads!



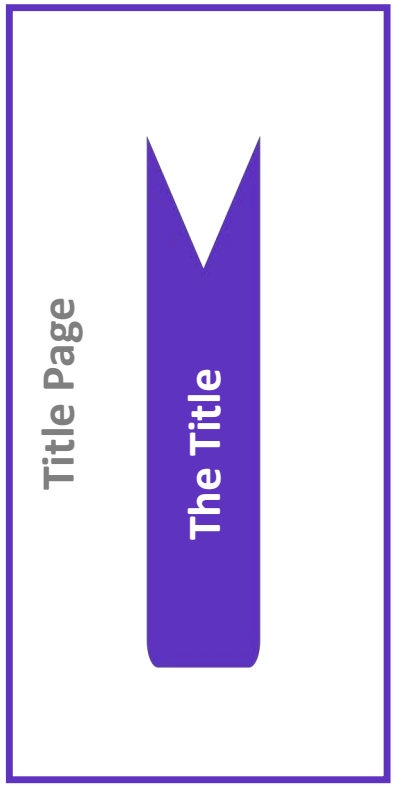
Five steps to follow when writing a title

Brainstorming and collaborating can help develop an effective title for your grant application



What do you think about this title?

Examples of grant proposal titles



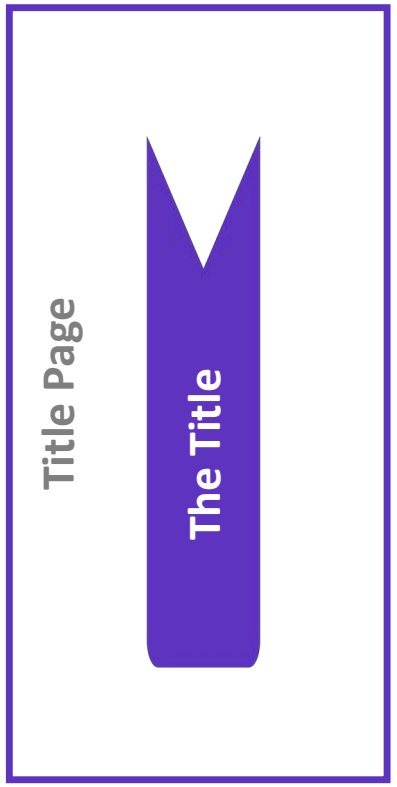
Will Public Health Authorities Be Ready When and If the Horrors of Bioterrorism Unfold in Their Cities?

Key Words	**Public health authorities** and **bioterrorism**
Simplicity	The sentence is not simple and too long
Not results driven	The sentence is not showing actively the possible results of the research

Better: Testing Public Health Preparedness and Response for Bioterrorism

What do you think about this title?

Examples of grant proposal titles

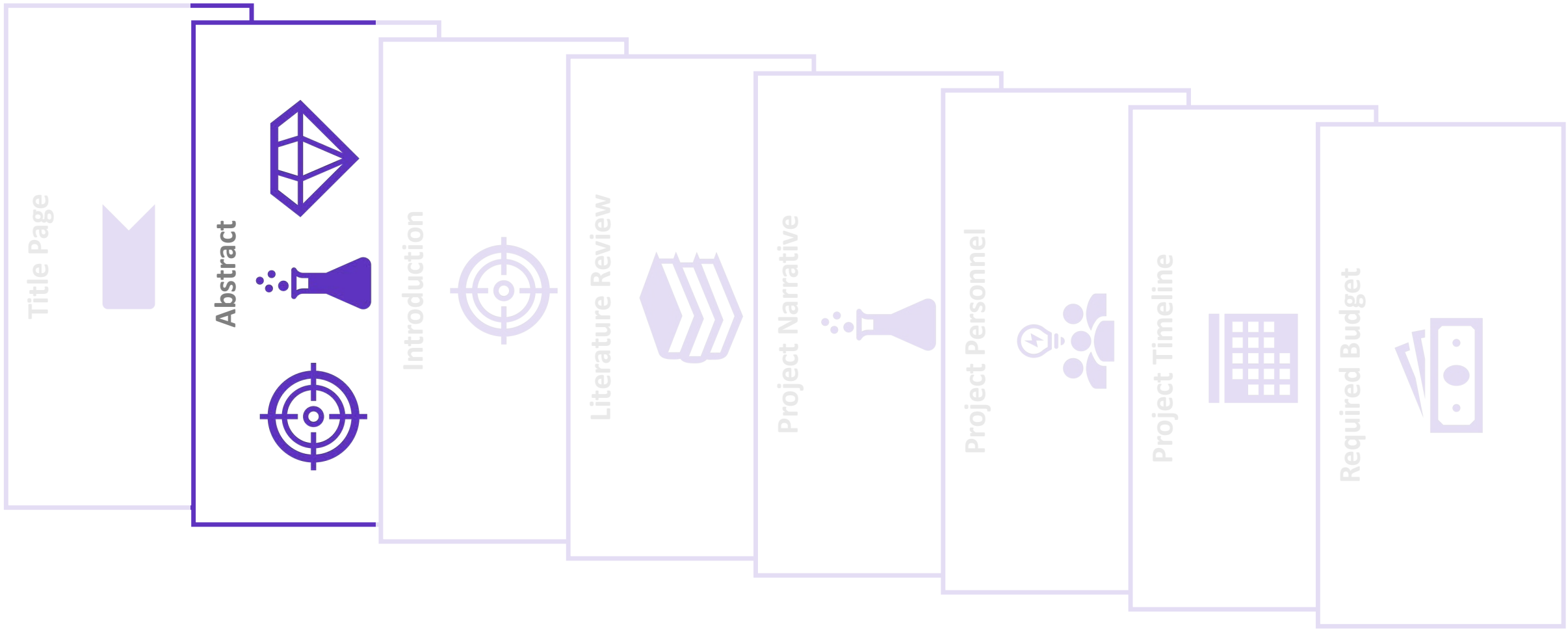


Identifying Neonatal Neurobehavioral Impacts of Iodine Insufficiency and Pesticide Exposures

Key Words	**Neurobehavior, Iodine, Pesticide**
Simple	The sentence is simple and not too long
Action driven	Identifying ……
Results driven	The aim is clear (identifying the impact)

General structure of a research grant proposal

Although each funding organization has their own requirements the below structure and sections are common



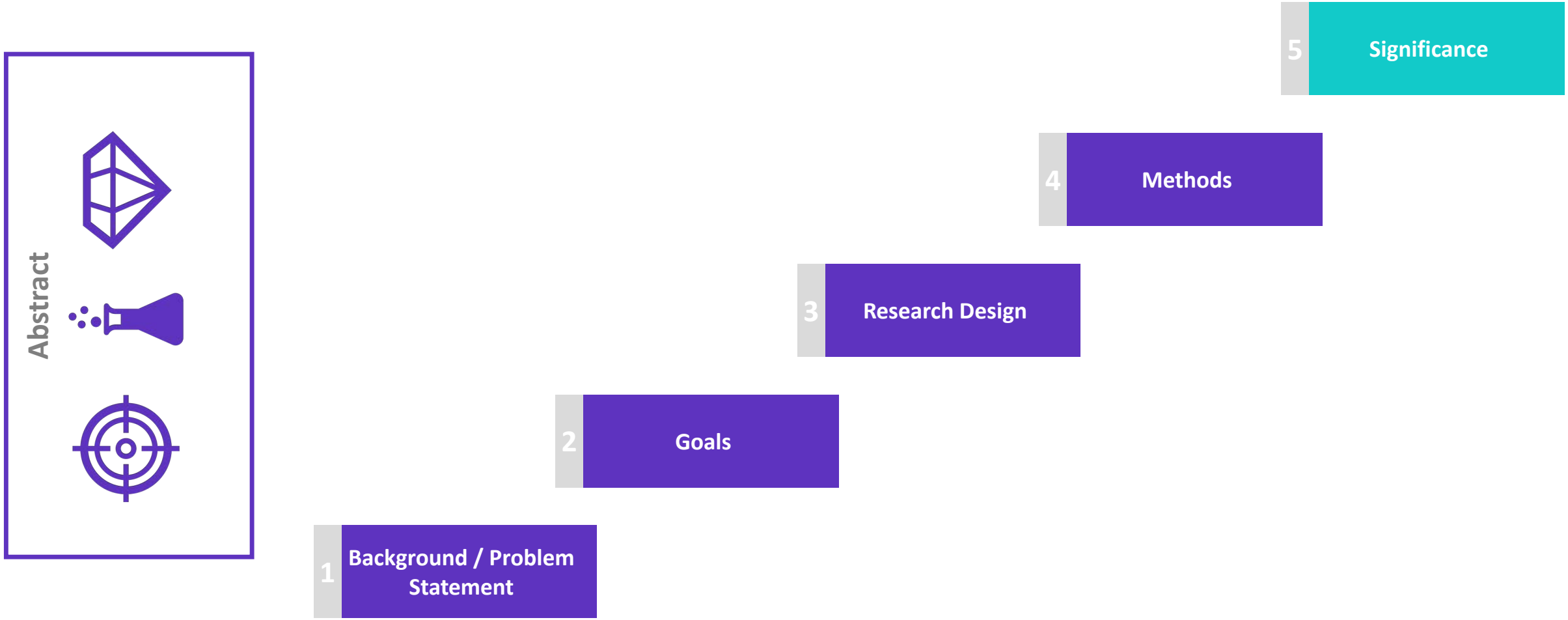
The abstract gives your reviewer the first impression make it lasting one

NIH Reviewer: “If I don’t get interested by the first page, the proposal is lost.”

Robert Porter, 2005. “What Do Grant Reviewers Really Want, Anyway?”

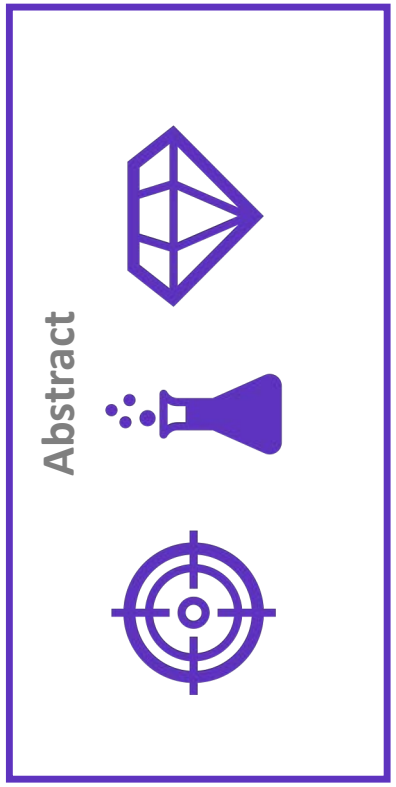
General structure of a research grant proposal

The five key parts of a grant proposal abstract



Tips for writing an abstract (1/3)

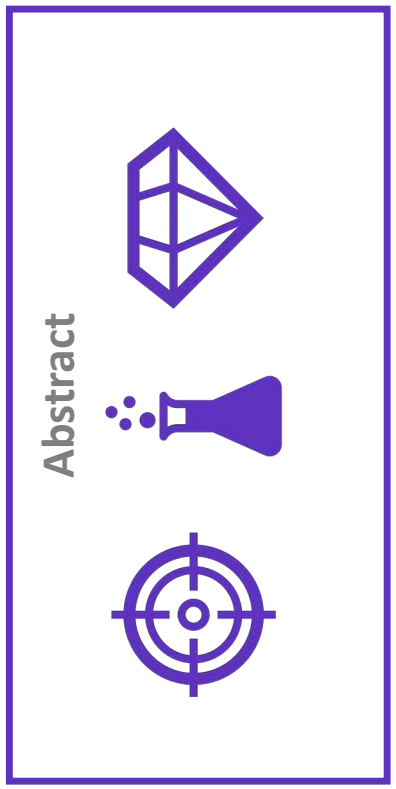
The abstract provide the first and last impression and reviewers may base their recommendation after reviewing it



- Draft the abstract last
- Write clearly and concisely
- Use action verbs
- Use varying sentence length
- Out-reach

Tips for writing an abstract (2/3)

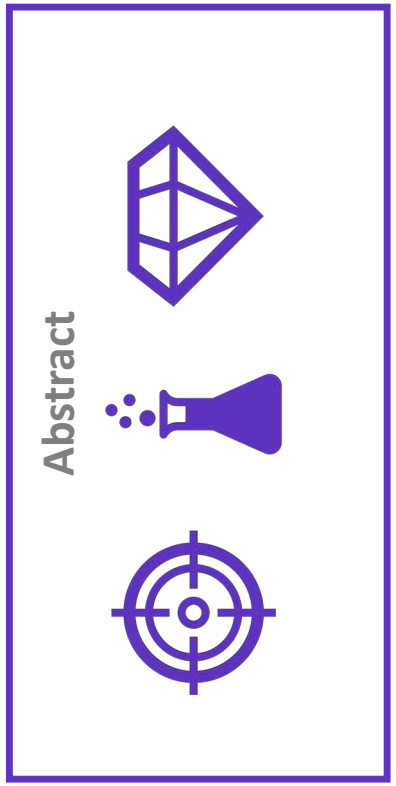
The abstract provide the first and last impression and reviewers may base their recommendation after reviewing it



- Focus on your proposal
- Include key words
- Adhere to style requirements
- Consult
- Avoid Emotional Intensifiers

Tips for writing an abstract (3/3)

The abstract provide the first and last impression and reviewers may base their recommendation after reviewing it



Sentences to highlight the problem

Sentences to highlight the goals

Sentences to highlight the methodology

Sentences to highlight the significance

Activity 1

What do you think of this abstract? Are there any statements missing?

X is a major human pathogen, which infects over 100 million people per year, leading to high morbidity and mortality. Current therapies for X are expensive, poorly tolerated, and only partially effective in controlling the pathogens and in limiting the disease. Recently, we and other succeeded in establishing a system to grow X in cell culture. These systems will allow us to completely dissect the life cycle of X. Our initial characterization of cell culture produced X indicates unusual physical properties. Understanding of X's life cycle will aid in the development of improved pharmaceuticals.

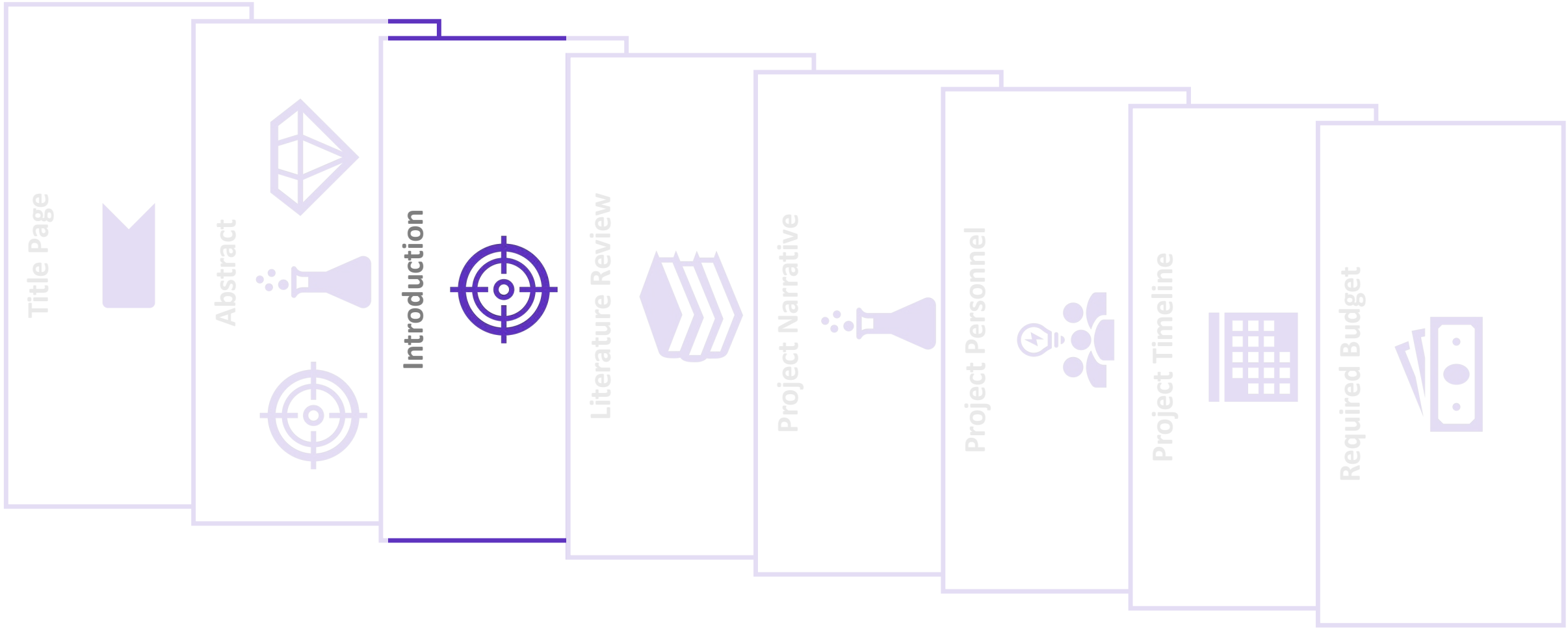
Activity 2

Which sections are missing from the abstract?

Current therapies for X are expensive, poorly tolerated, and only partially effective in controlling the pathogens and in limiting the disease	**Problem statement is missing. This is a statement the highlights the need**
Recently, we and other succeeded in establishing a system to grow X in cell culture. These systems will allow us to completely dissect the life cycle of X.	**Not clear methodology and unclear objectives**
Our initial characterization of cell culture produced X indicates unusual physical properties	**Unnecessary information in the abstract**

General structure of a research grant proposal

Although each funding organization has their own requirements the below structure and sections are common



General structure of a research grant proposal

The key parts of a grant proposal introduction

Introduction

Statement of the problem

Purpose of your research

Research Goals

Significance

General structure of a research grant proposal

The key parts of a grant proposal introduction

Statement of the problem

General Empirical Statement

Introduction

Specific Empirical Statement

The Hook

General structure of a research grant proposal

The key parts of a grant proposal introduction

Purpose of your research

Aim of the study

Introduction

S.M.A.R.T Research Question

Elaborate

Relate

General structure of a research grant proposal

The key parts of a grant proposal introduction

Introduction

Outcome

Brief Research Methodology

Research Goals

Significance

Significance

Activity

To which part of the introduction does this statement belong?

Proposal Title: Investigating the Effect of Tail Loss on Swimming and Running Abilities of Semi-Aquatic and Terrestrial Plethodontid Salamanders

Introduction

Statement: Tail autotomy is the ability to lose or shed the tail when grasped by a predator. Numerous lizards (Bellairs and Bryant 1985) and salamanders (Maiorana 1977, Duceyand Brodie 1983) use autotomy of the tail to avoid predation.

- Statement of the problem
- Purpose of your research
- Research Goals
- Significance
- General Empirical Statement
- Specific Empirical Statement
- The Hook

Activity

To which part of the introduction does this statement belong?

Introduction

Proposal Title: Investigating the Effect of Tail Loss on Swimming and Running Abilities of Semi-Aquatic and Terrestrial Plethodontid Salamanders

Statement: Whereas the potential costs of tail autotomy for respiration (Smits and Brodie 1995), social interactions (Wise and Jaeger 1998, Meche and Jaeger 2002), and some anti-predator behaviors (Labanick 1984, Ducey et al. 1993) have been studied in salamanders, the effect of tail loss on the locomotor abilities has not been examined

Statement of the problem

Purpose of your research

Research Goals

Significance

General Empirical Statement

Specific Empirical Statement

The Hook

Activity

To which part of the introduction does this statement belong?

Introduction

Proposal Title: Investigating the Effect of Tail Loss on Swimming and Running Abilities of Semi-Aquatic and Terrestrial Plethodontid Salamanders

Statement: I will examine the effect of tail loss on the running and swimming abilities of terrestrial and semi-aquatic plethodontid salamanders.

- Statement of the problem
- Purpose of your research
- Research Goals
- Significance
- Aim of the study
- S.M.A.R.T Research Question
- Elaborate
- Relate

Activity

To which part of the introduction does this statement belong?

Proposal Title: Investigating the Effect of Tail Loss on Swimming and Running Abilities of Semi-Aquatic and Terrestrial Plethodontid Salamanders

Introduction

Statement: In salamanders, the tail is required for swimming but may not be needed for running. Therefore, I predict that tail loss will reduce aquatic sprint speed, but will increase or have no effect on terrestrial sprint speed. If this occurs, it would indicate that tail autotomy may be a more beneficial anti-predator strategy for terrestrial species than for semi-aquatic species. Thus, I will also compare the propensity for tail loss among semi-aquatic and terrestrial species

Statement of the problem

Purpose of your research

Research Goals

Outcome

Significance

Activity

To which part of the introduction does this statement belong?

Proposal Title: Investigating the Effect of Tail Loss on Swimming and Running Abilities of Semi-Aquatic and Terrestrial Plethodontid Salamanders

Introduction

Statement: Because recent phylogenies are available for these species, I can use the comparative method (Felsenstein, 1985) to determine if any differences between semi-aquatic and terrestrial species are adaptive or simply reflect phylogenetic differences

Statement of the problem

Purpose of your research

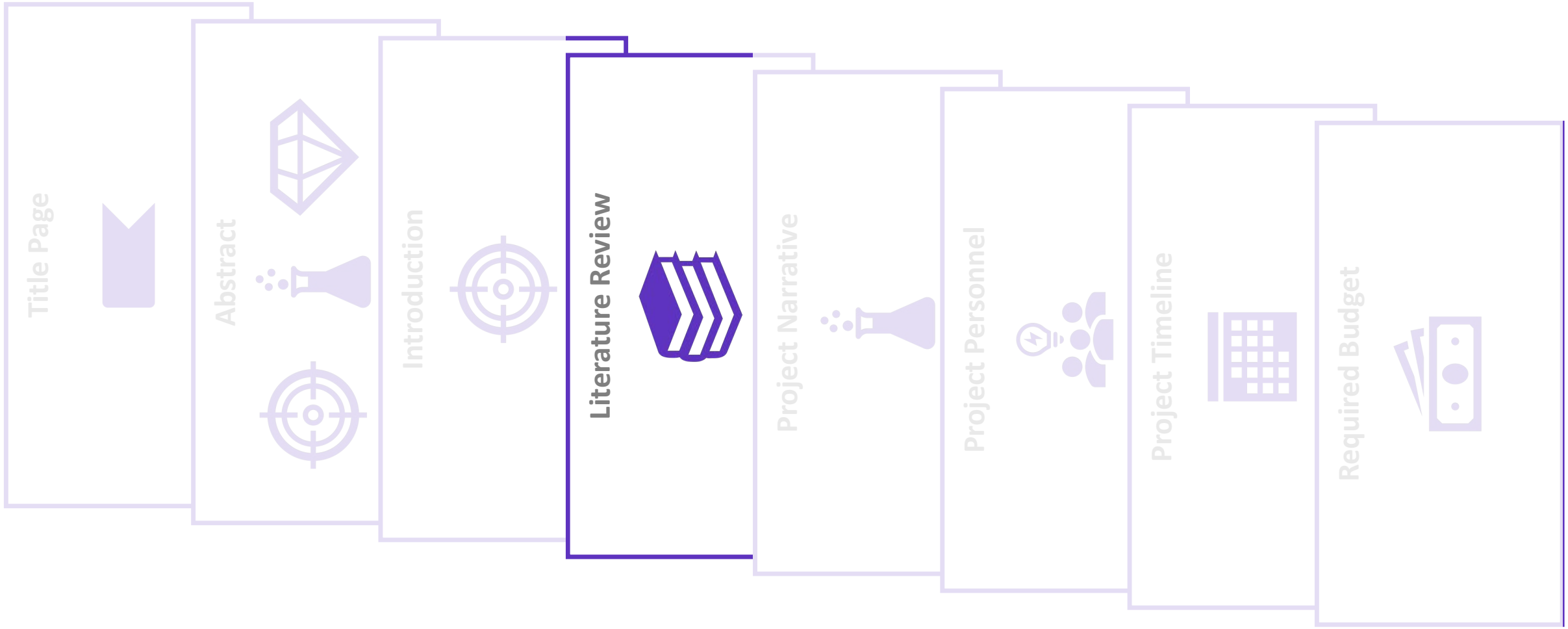
Research Goals

Brief Research Methodology

Significance

General structure of a research grant proposal

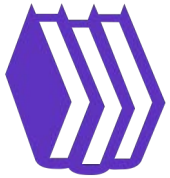
Although each funding organization has their own requirements the below structure and sections are common



General structure of a research grant proposal

The aim of a grant proposal literature review

Literature Review



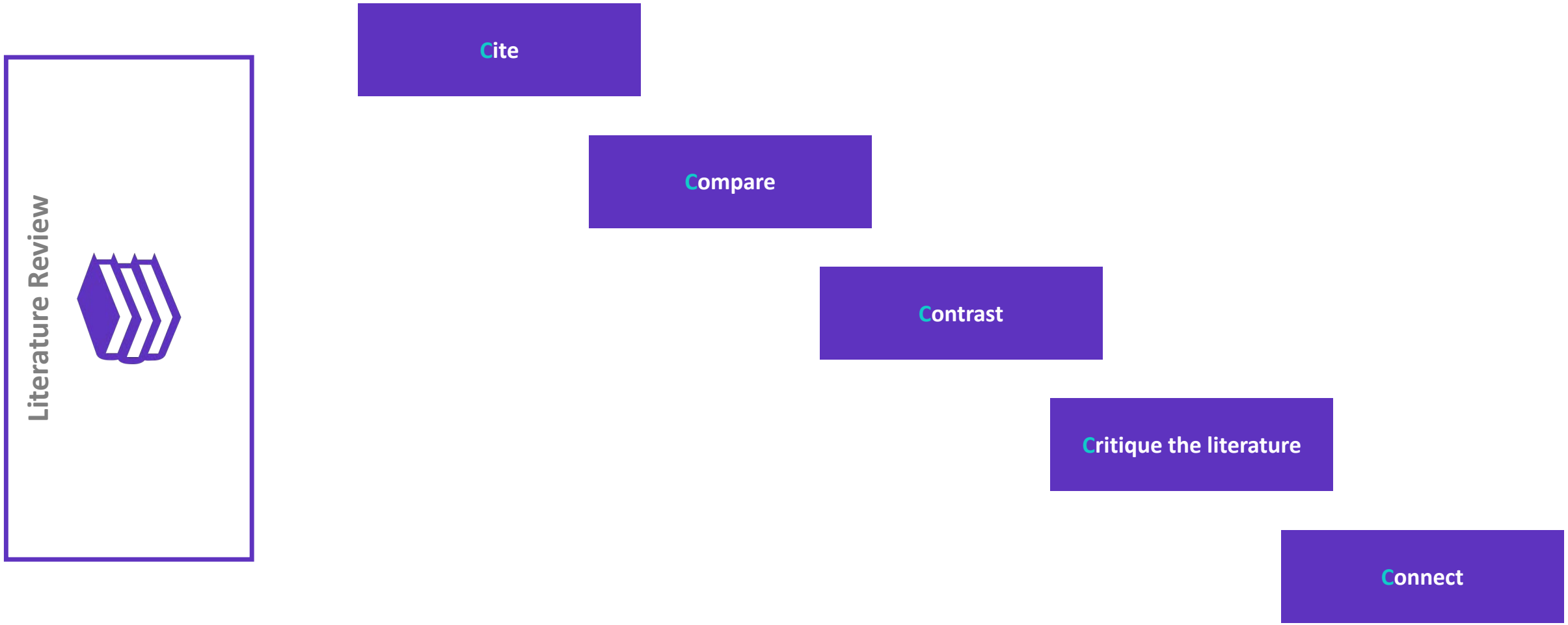
Did you do your homework?

Scope

Reviewers assess your critical thinking

General structure of a research grant proposal

Remember the 5Cs when writing a literature review



Activity

Remember the 5Cs when writing a literature review: Is this review along the 5Cs? And which C is satisfied in this statement?

Literature Review

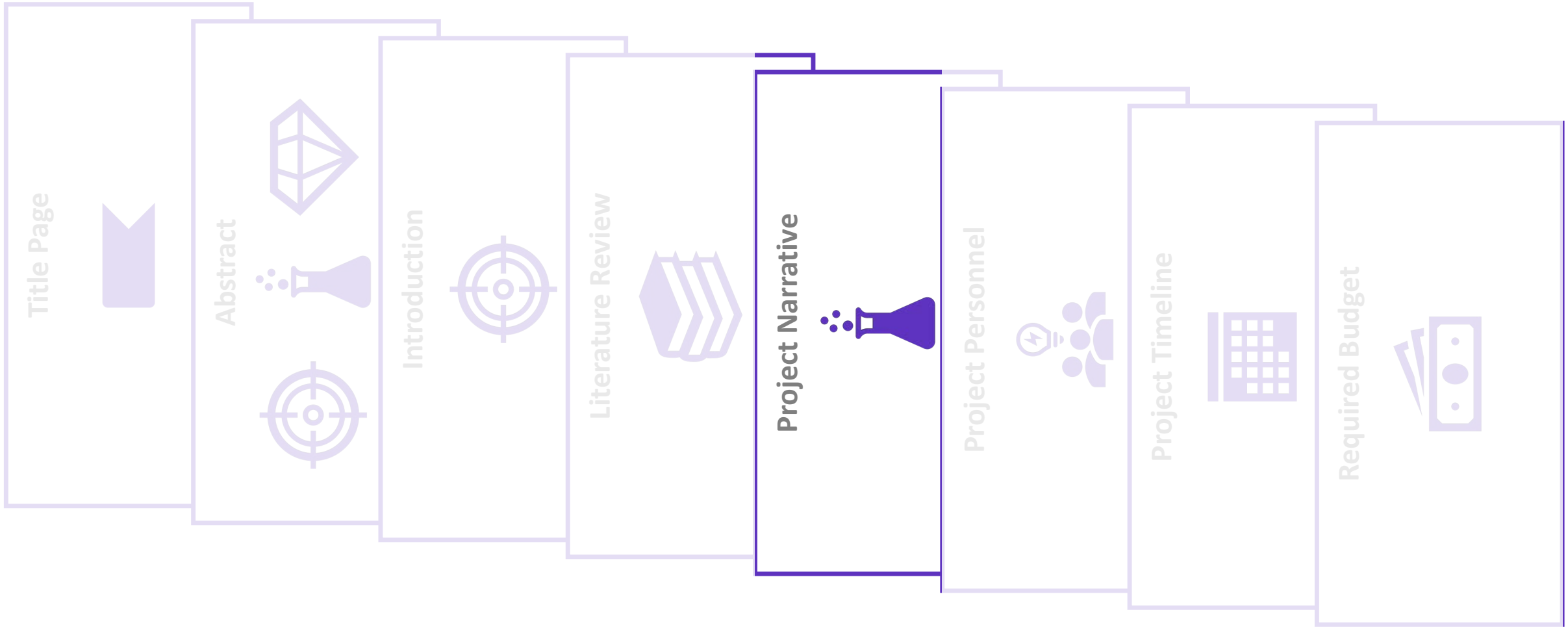
Proposal Title: Investigating the Effect of Tail Loss on Swimming and Running Abilities of Semi-Aquatic and Terrestrial Plethodontid Salamanders

Statement: Tail loss may also alter individual fitness by affecting locomotion. In lizards, tail loss can either hinder or enhance locomotor abilities. The effect in a given species may depend on whether the tail is functionally active or passive during locomotion (Vitt et al. 1977). In species with tails that contribute to locomotion, tail loss decreases sprint speed (Ballinger et al. 1979, Punzo 1982, Arnold 1984, Mushinsky and Gans 1992, Martin and Avery 1998). Tail loss may have no effect (Huey et al. 1990, Hamley 1990) or increase sprint speed (Daniels 1983, Brown et al. 1995) in species that do not use their tail for locomotion.

Cite	Is the literature review focused on the research question?
Compare	Do we have a comparison on research results in this topic?
Connect	Can this literature review be used as a point of departure?

General structure of a research grant proposal

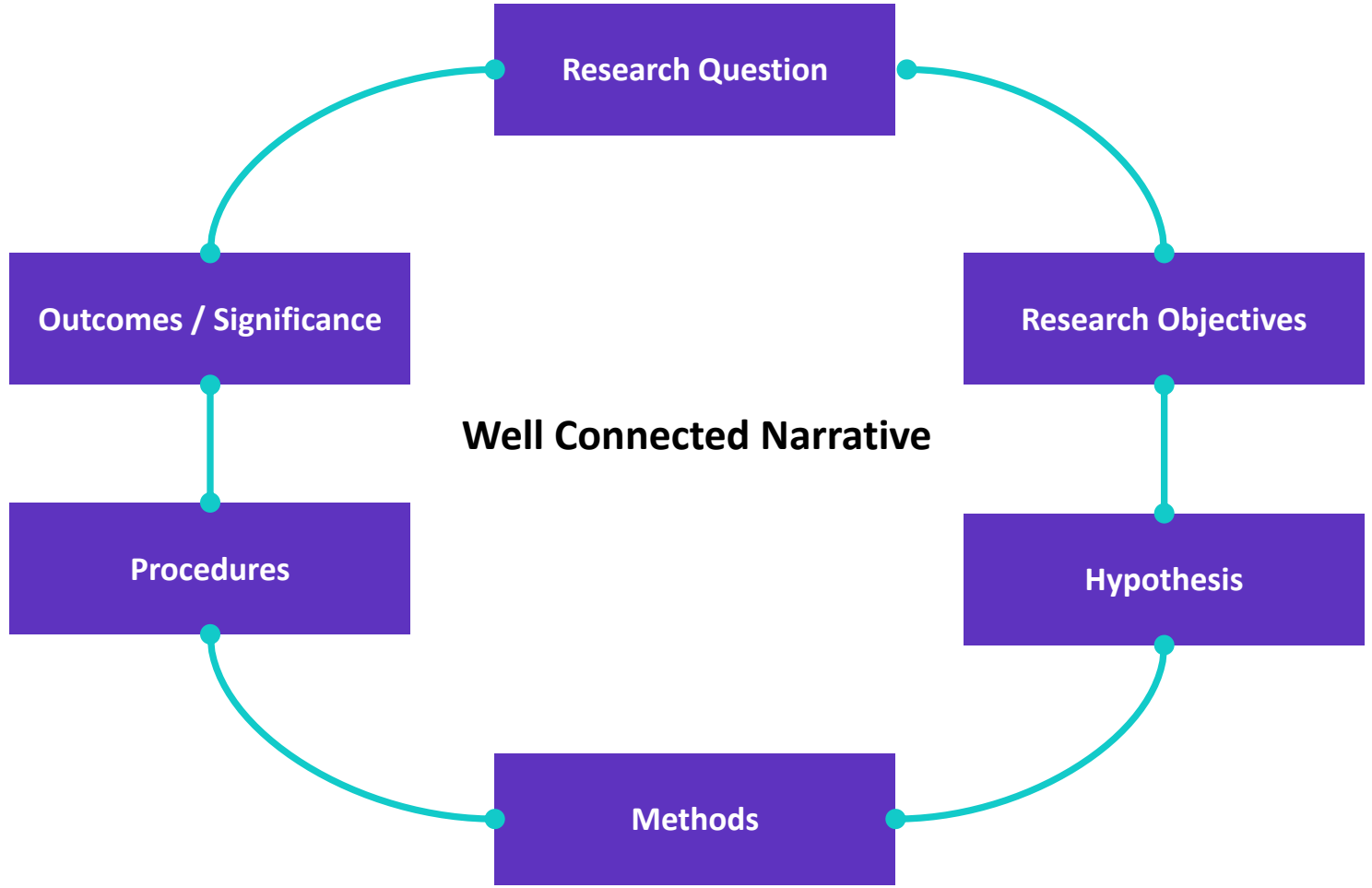
Although each funding organization has their own requirements the below structure and sections are common



General structure of a research grant proposal

In the project narrative, answer all of the reviewers' questions. Don't leave them wondering about anything!

Project Narrative

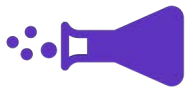


General structure of a research grant proposal

When writing the project narrative go into details

Research Question

Project Narrative



Focus

Detail

Highlight the gap

State the critical need

Hypothesis

Research Objectives

General structure of a research grant proposal

The purpose of this paragraph is to convince your reviewers that the results of your project will meet the gap or need you described in the introductory paragraph

Long-term objectives

Future Advancement

Focus on the outcome

Outline the central hypothesis

Describe your sub-objectives

Project Narrative

Methods

Procedures

General structure of a research grant proposal

How will you complete the project and answer the stated problem?

Project Narrative

Outline the methods

Explain the methods

Rational for choosing the approach

Procedure

Feasibility

General structure of a research grant proposal

This paragraph is an important part of inspiring your reviewers and leaving them with a positive outlook on your project (and you!)

Outcomes / Significance

Outcomes Description

Emphasize the impact

Relate to critical need

Restate the Value

Relate to funder

Project Narrative

Research Question

Activity

Organize the following sentences to the corresponding research question section

Project Narrative

State the critical need	Completion of the work we propose here will open new possibilities for therapeutic strategies that specifically target biofilm structure and/or mechanics.
Detail	Unlike well-mixed, liquid cultures, biofilm infections have well-defined spatial structure. This spatial structure is given by the sizes of bacterial aggregates, the relative positions of aggregates, and matrix heterogeneity
Highlight the gap	However, there is little to no in-depth, quantitative knowledge regarding the impact of spatial structure and mechanics on disease course
Focus	Most chronic bacterial infections are caused by biofilms, aggregated bacteria that are embedded in a matrix of polymer and protein.

Focus | Detail | Highlight the gap | State the critical need

Hypothesis

Research Objectives

Activity

Organize the following sentences to the corresponding “Hypothesis” and “Research Objectives” sections

Project Narrative

Outline the central hypothesis	Our central hypothesis is that spatial structure and mechanics are the major physical factors controlling the development of pathogenicity, antibiotic resistance, and immune evasion in biofilm infections. This is based on a synthesis of our own and others’ papers.
Future Advancement	The work we propose here will also develop experimental techniques and understanding of an important model system that will constitute a widely-applicable platform for assessing the impact of biofilm structure for other infecting organisms.
Describe your sub-objectives	We will test our central hypothesis and attain our objective via the following specific aims: 1: Determine the spatial structure and mechanics of biofilm infections in wounds & 2: Determine how spatial arrangements impact bacterial growth
Long-term objectives	Our long-term goal is to find new strategies for remediating biofilm infections by addressing physical properties
Focus on the outcome	The rationale is that completion will identify key physical targets for preventing, disrupting, or ameliorating biofilm infections for an important biofilm-forming opportunistic human pathogen

Long-term objectives

Future Advancement

Focus on the outcome

Outline the central hypothesis

Describe your sub-objectives

Clarivate™

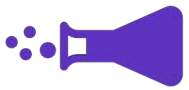
Methods

Procedures

Activity

Organize the following sentences to the corresponding “Methods” and “Procedures” sections

Project Narrative



Rational for choosing the approach	At present, no good technique for measuring the mechanics of biofilm infections exists. We will develop such a technique using AFM microindentation and abradement of ex vivo biofilms
Procedure	Activity 1-1: Determine the structures of P. aeruginosa biofilm infections as a function of infection time and matrix production capability, Activity 1-2. Determine biofilm mechanics as a function of matrix content and infection time
Outline the methods	**Aim 1:** For this, we will use sophisticated imaging to determine, in three dimensions, the size, number, locations, and matrix content of bacterial aggregates in a mouse model of wound infection. We will measure the density of neutrophils around the biofilm
Explain the methods	These samples will be placed onto an agar plate and kept submerged within a growth broth. These samples will then be characterized using an Asylum Research MFP-3D SA AFM in a liquid environment
Feasibility	Our lab has approximately 1500 square feet of lab space and 2000 additional square feet across the street. The total lab space includes one large (2 microscopes) and 1 small specially-designed microscopy rooms

Outline the methods

Explain the methods

Rational for choosing the approach

Procedure

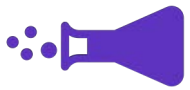
Feasibility

Outcomes / Significance

Activities

Organize the following sentences to the corresponding “Outcomes / Significance” sections

Project Narrative



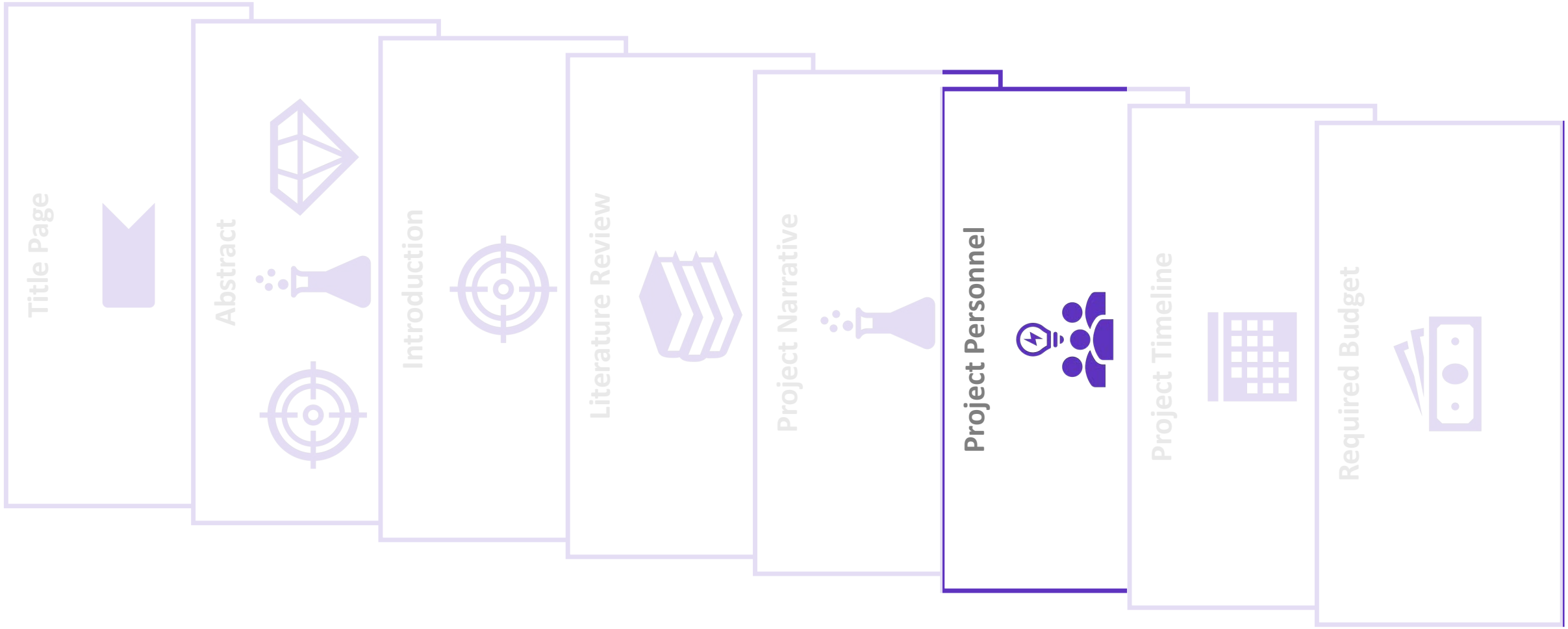
Restate the Value	Chronic infections caused by biofilms annually affect 17 million Americans, cause at least 550k deaths, and cost the US healthcare billions of dollars [2-8]. This contribution will be significant because it will identify cases where structure and/or mechanics should be or inform specific therapeutic targets.
Relate to critical need	The outcomes of this aim will be an **understanding of how key characteristics of biofilm structure impact the development of microenvironments** that lead to two important properties of biofilms– antibiotic tolerance and virulence
Emphasize the impact	This will open the possibility of manipulating biofilm structure and microenvironments to make them more amenable to antibiotic treatment, or to treatment with less-toxic combinations of antibiotics, and/or to make biofilms less virulent.
Outcomes Description	The overall outcome of this aim will be comprehensive knowledge of the structural and mechanical characteristics of P. aeruginosa biofilm infections that develop in chronic wounds. This knowledge will be used to guide our work in Specific Aims 2 and 3
Relate to funder	Thus, this proposal is relevant to the part of NIH’s mission that pertains to fostering fundamental creative discoveries and innovative research strategies as a basis for ultimately protecting health.

Outcomes Description | Emphasize the impact | Relate to critical need | Restate the Value | Relate to funder

Clarivate™

General structure of a research grant proposal

Although each funding organization has their own requirements the below structure and sections are common



General structure of a research grant proposal

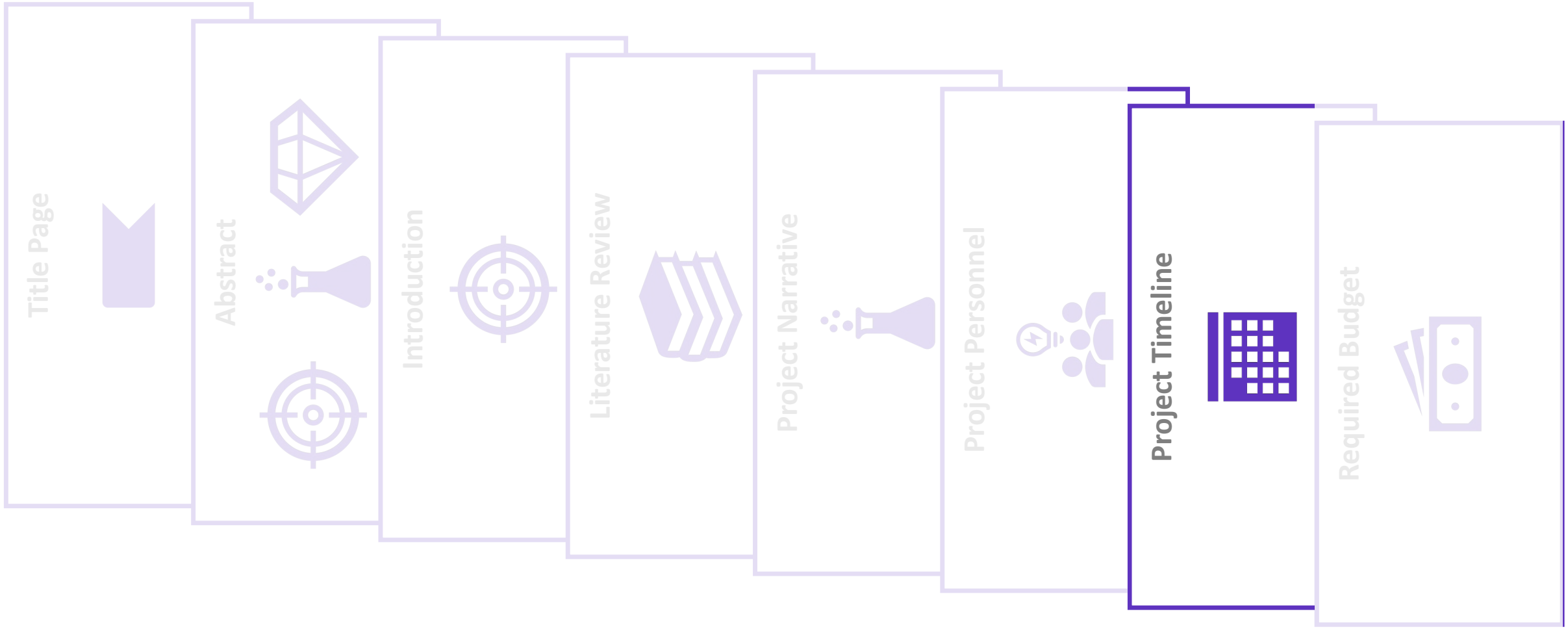
Having the right team will show the reviewer and your team will deliver a successful project

Project Personnel

- Illustrate the team and the tasks
- Are you qualified?
- Training
- Choose the right staff
- Choose the right collaborators

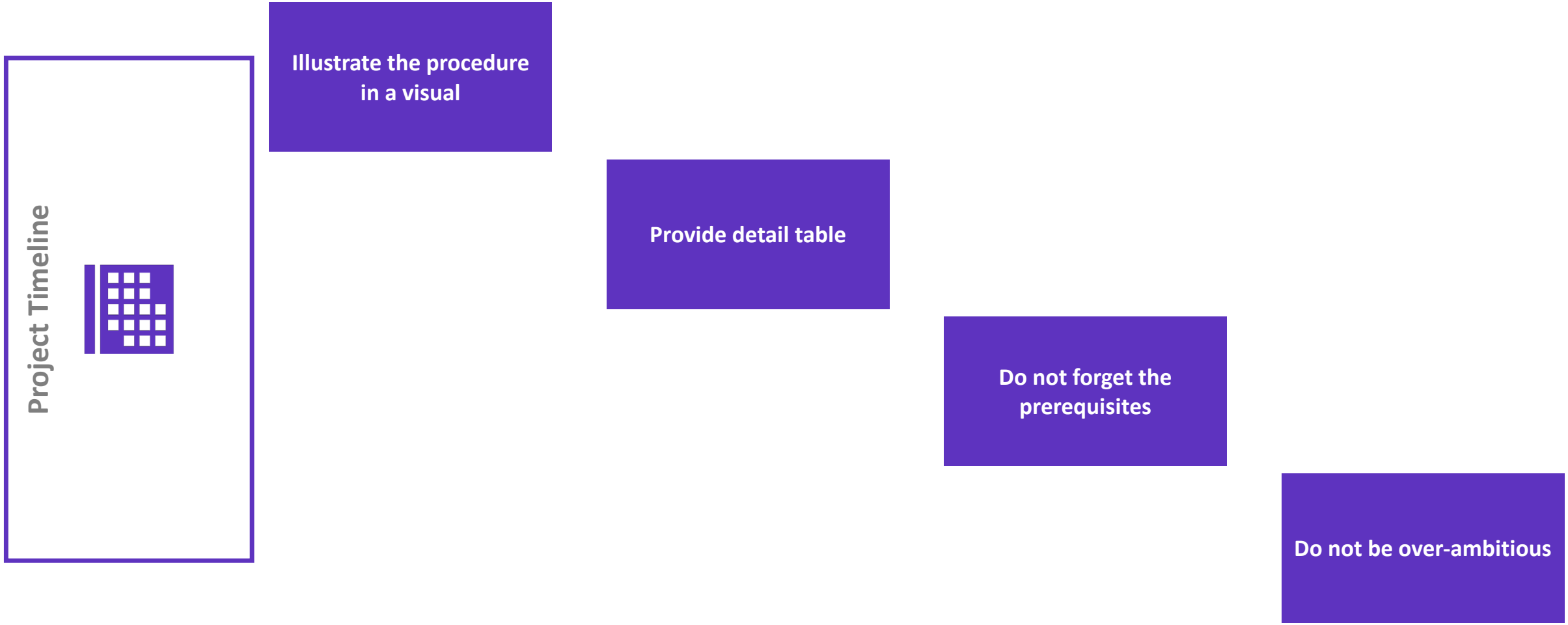
General structure of a research grant proposal

Although each funding organization has their own requirements the below structure and sections are common



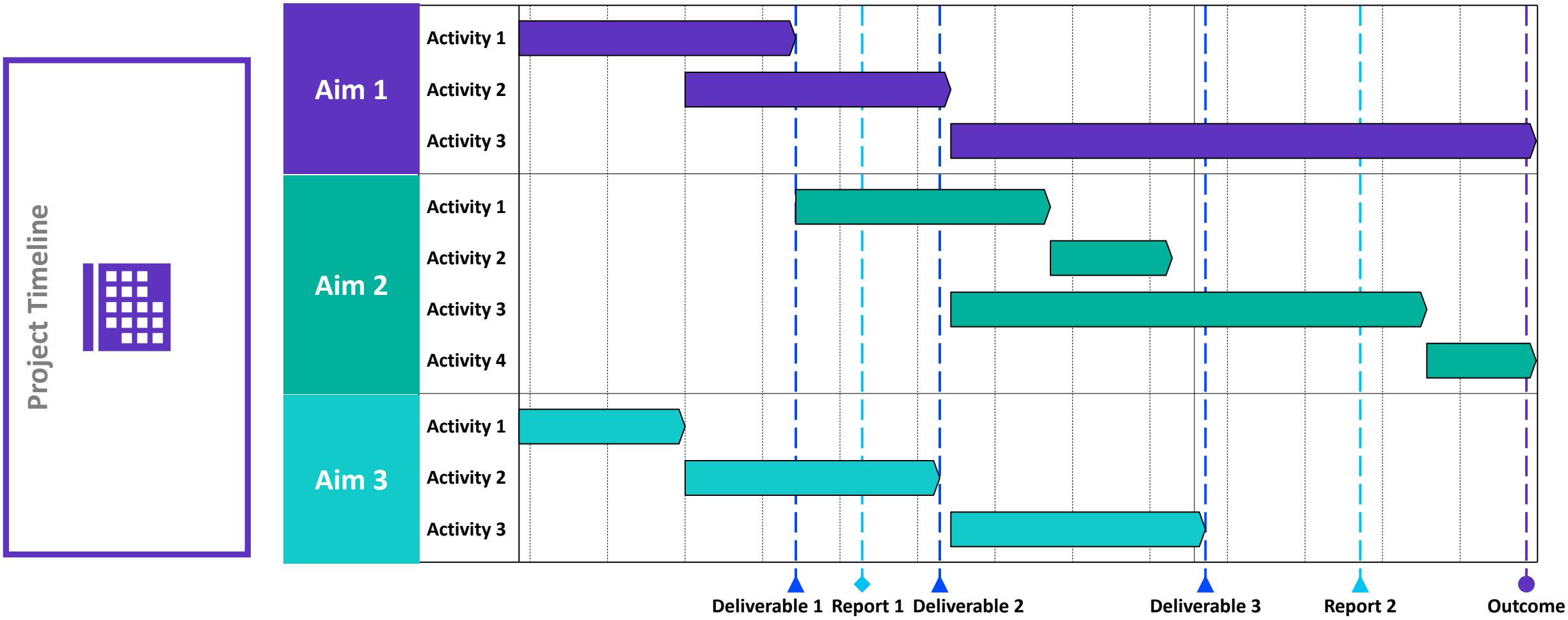
General structure of a research grant proposal

Show the reviewer that you have planned each step carefully!



General structure of a research grant proposal

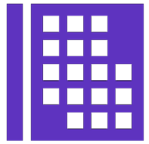
One way to structure your plan is by using your aims as a guide



General structure of a research grant proposal

Example of a detailed tabular project plan

Project Timeline

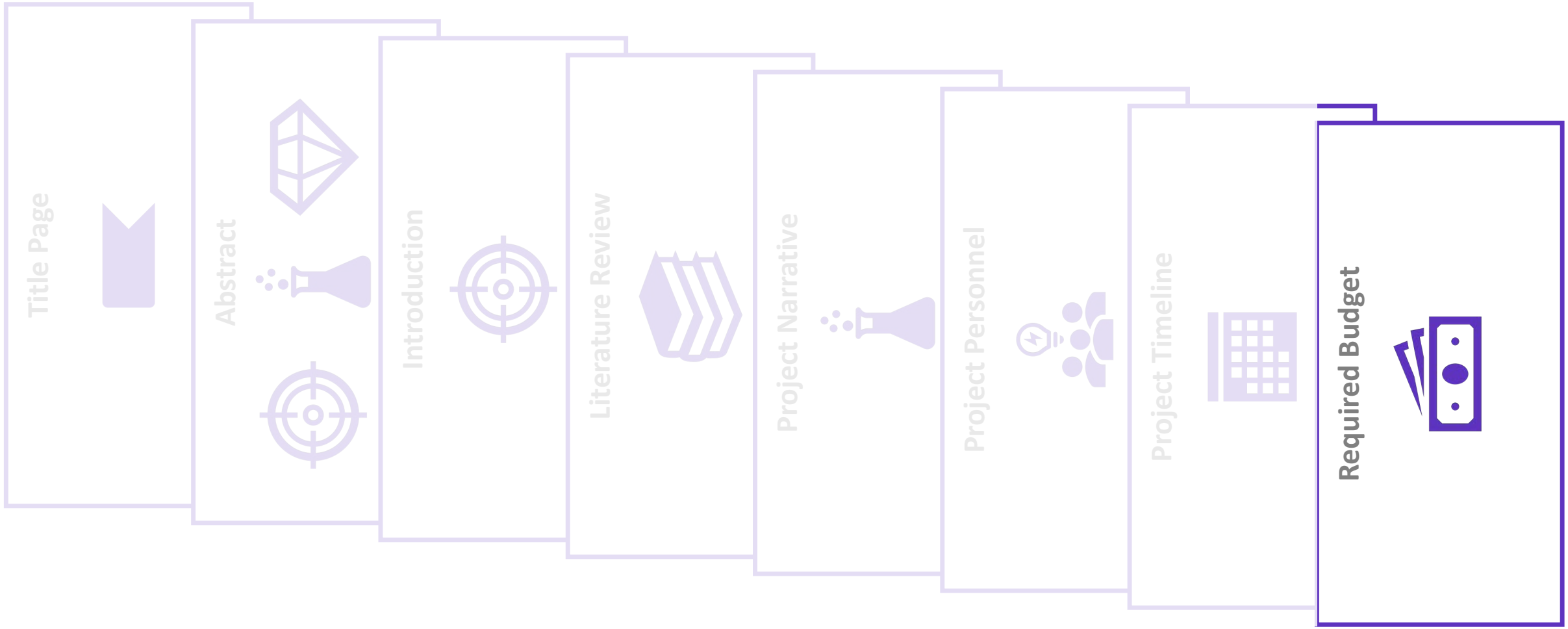


Project Goal	Related Objective	Activity	Expected Completion Date	Person Responsible
Enhance understanding of the need for ADM and other health services among juvenile detainees as they age.	Assess ADM service needs.	Retain subjects for the longitudinal study.	Ongoing	Associate Director Mary Jones
	Conduct 6- and 8-year follow-up interviews.	Conduct 300 follow-up int iews	Ongoing	Associate Director John Brown
	Submit papers on the development of disorders over time.	Prepare o n the development of single disor aseline to the three-year follow-up i	Month 5	Project Director Jane Smith
		are a second paper on comorbidity as youth ge.	Month 12	Project Director Jane Smith
Enhance understanding of the extent to which juvenile detainees receive services and experience barriers to services over time.	Assess if and when juveniles who need ADM services receive them after their cases reach disposition (whether they are in the community or incarcerated) and from which sectors: mental health, juvenile justice/adult corrections, child welfare, etc.	Prepare paper on longitudinal service utilization and predictors of service utilization among detainees three years after their baseline interview.	Month 5	Project Director Jane Smith
	Examine perceived barriers to care.	Prepare paper on barriers to services among detainees three years after their baseline interview.	Month 3	Project Director Jane Smith

Exemplary

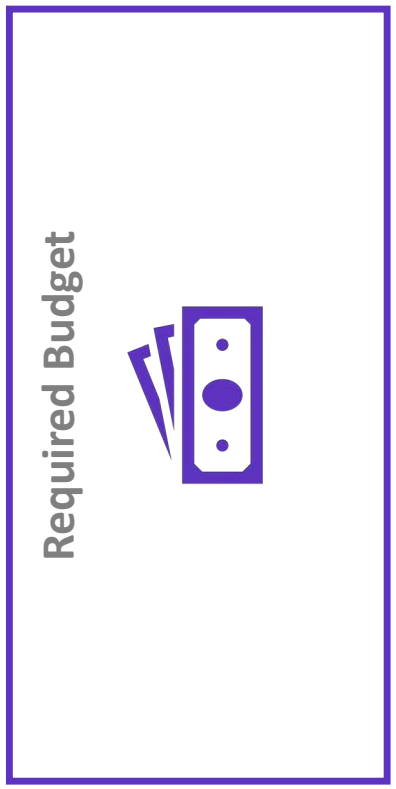
General structure of a research grant proposal

Although each funding organization has their own requirements the below structure and sections are common



General structure of a research grant proposal

General guidelines when preparing a project budget



Know the agency guidelines

Agencies want to fund high quality research

But!

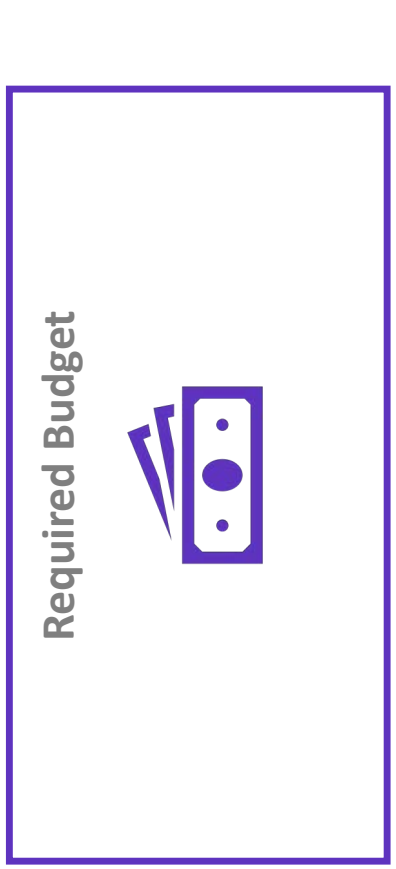
Provide an Explanation

Provide a transparent spreadsheet / table

Follow the funding agency requirements

General structure of a research grant proposal

Costs to consider when preparing a project budget



- Staff Salaries
- Overhead Costs
- Equipment
- Material
- Travel

General structure of a research grant proposal

Exemplary spreadsheet

Required Budget

Item	Quantity	Cost	Subtotal	Total
RDU-Kigali (roundtrip)	1		$6,100	$6,100
Rwanda	12 months	$1,899	$22,788	$22,788
Research Assistant/Translator	12 months	$400	$4800	
Transportation within country –Phase 1	4 months	$300	$1,200	
Transportation within country –Phase 2	8 months	$1,500	$12,000	
Email	12 months	$60	$720	
Audio cassette tapes	200	$2	$400	
Photographic and slide film	20	$5	$100	
Laptop Computer	1		$2,895	
NUD*IST 4.0 Software			$373	
Total Project Allowance				$35,238
Administrative Fee				$100
Total				**$65,690**

https://writingcenter.unc.edu/tips-and-tools/grant-proposals-or-give-me-the-money/#example1

General structure of a research grant proposal

Exemplary cost explanation and justification

Required Budget

Jet travel $6,100

This estimate is based on the commercial high season rate for jet economy travel on Sabena Belgian Airlines. No U.S. carriers fly to Kigali, Rwanda. Sabena has student fare tickets available which will be significantly less expensive (approximately $2,000)

Research assistant/translator $4,800

The research assistant/translator will be a native (and primary) speaker of Kinya-rwanda with at least a four-year university degree. He/she will accompany the primary investigator during life history interviews to provide assistance in comprehension. In addition, he/she will provide commentary, explanations, and observations to facilitate the primary investigator's participant observation. During the first phase of the project in Kigali, the research assistant will work forty hours a week and occasional overtime as needed. During phases two and three in rural Rwanda, the assistant will stay with the investigator overnight in the field when necessary. The salary of $400 per month is based on the average pay rate for individuals with similar qualifications working for international NGO's in Rwanda.

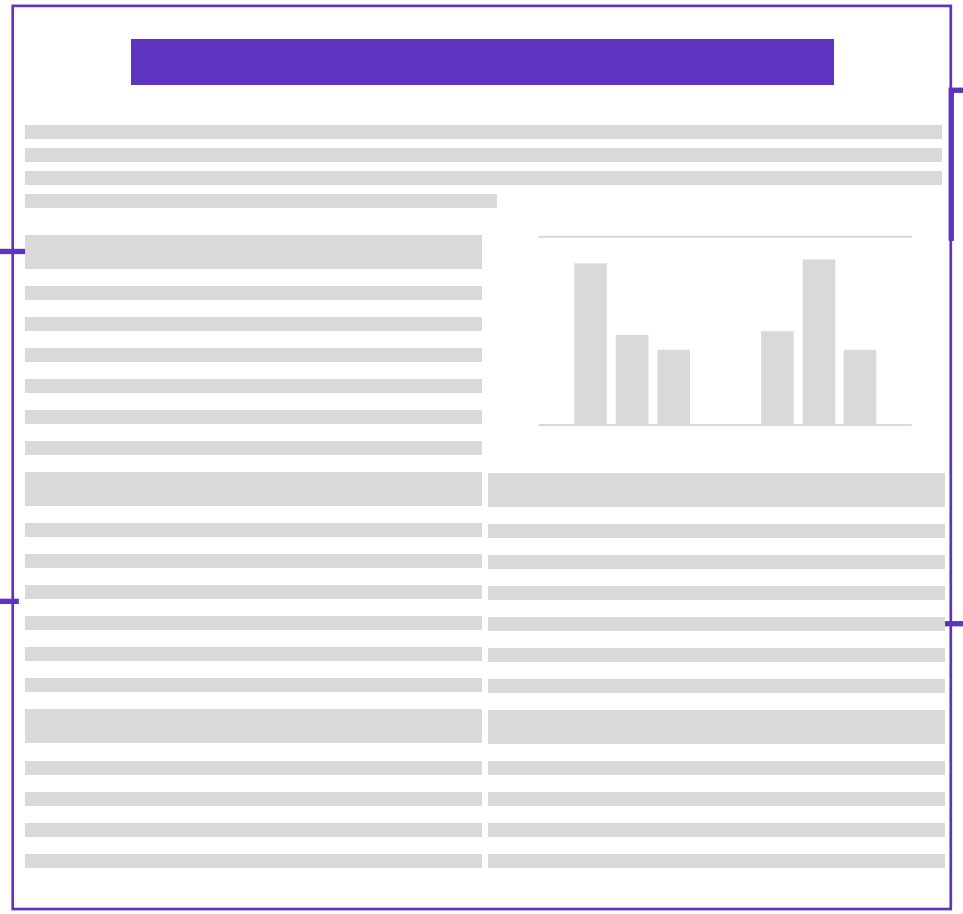
https://writingcenter.unc.edu/tips-and-tools/grant-proposals-or-give-me-the-money/#example1

Excessive length what to do?

Remove less important information

Definitions

Exact Data



Detail on Methods

Previous Studies

Long sentences are usually complicated

Sort sentences are usually clear and simple

Problem Statement + Significance

Developing effective vaccines to prevent infection and to treat chronic infection or cancer remains a formidable challenge primarily because we do not fully understand how memory T and B cells develop during immune responses

Problem Statement

We do not fully understand how memory T and B cells develop during immune responses.

Significance

This knowledge gap creates a formidable challenge to develop effective vaccines to prevent infection and treat chronic infection or cancer.

Use simple vocabulary

Make it easy for the reviewer

A large number of	many
Along the lines	like
As a general rule	generally
Exhibits the ability	can
On the occasion of	when
Is equipped with	contains
In the light of the fact	because

Use action verbs

Make it easy for the reviewer

Verbs	
Make a decision	decide
Cause a decrease	decrease
Be a failure	fail
Have a tendency	tend

These studies **contribute to the identification** of cellular progenitors of memory CD8 T cells

These studies **helped to identify** the cellular progenitors of memory CD8 T cells

Fund Opportunities for Egyptian Researchers: STDF

What is STDF?

Governance

The Higher Council for Science & Technology

Ministry of Higher Education And Scientific Research

Science And Technology Development Fund

Universities

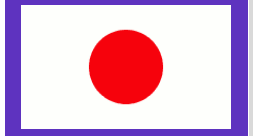
Research Centers

What is STDF?

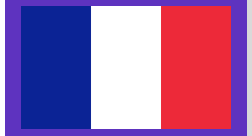
International Collaborations

16 M $/5years
Collaborative Research $200,000/project
Junior scientists visits $30,000/project

10 Joint Research Projects/year
1.7 M EGP/project



Research 145,000 EGP/project
Seminars 85,000 EGP/project



Research €50,000/project
Chair of Excellence €150,000/ project
Mobility €5,000/project

German Egyptian Research Fund (GERF)
€100,000/project
German Egyptian Scientific Exchange & Excellence Development (GE-SEED), Mobility: 125 K €/year
€30,000/project

2 M £/year
Research projects
Workshops
Mobility

What is STDF?

International Collaborations

Research
300 K $/YEAR
40 K $/project

Research $60,000/ project

Research projects (50 K €/Project)
Mobility

Research (3y) 240.000 EGP/
project

10 Joint Research Projects/CALL
1 M EGP/project

Research $60,000/ project

What is STDF?

International Collaborations

Partnership on Research and Innovation in the Mediterranean Area
R&I approaches to improve water availability and sustainable agriculture production
1.5 M €/year, (up to 10 years)

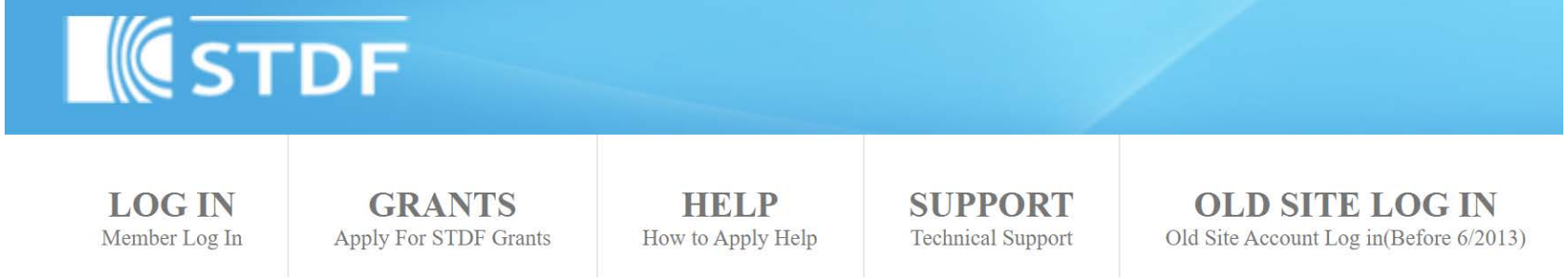
African-European collaboration for Science and Technology
increasing the coordination between research across EU, in close coordination with national research in Africa
Up to 1 M €

African-European joint collaboration for Science and Technology
LEAP-Agri is a joint Europe Africa (R&I) initiative related to Food and Nutrition Security and Sustainable Agriculture (FNSSA)
Up to 750 K €/call

Euro-Mediterranean Cooperation through ERANET joint activities
enhance Euro-Mediterranean co-ownership through innovation and competitive research in the societal challenges of the region
Up to 750 K €/call

What is STDF?

Call Announcements Page



Calls Announcements

Calls Announcements:

The following are both active and expired calls for proposals:

- Agriculture Call announcement
- Basic & Applied Call announcement
- Capacity Building Call announcement
- Egypt-US
- Egyptian Japanese Grants
- Faculty for factory Call announcement
- German Egyptian Research Fund (GERF)

http://www.stdf.org.eg/page/?pid=86

German Egyptian Research Fund (GERF)

What is it? And what are its objectives?

Objectives

Objective 1

The grants are intended to give researchers – including young scientists – an opportunity to address new areas of scientific research

Objective 2

Research results generated in these projects are to be developed into concrete applications

Objective 3

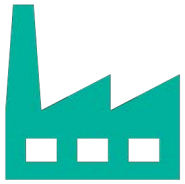
Another aim of the joint research fund is to help scientific networks apply for funding under EU or national funding schemes.

German Egyptian Research Fund (GERF)

Eligibility

Egyptian-German Research Teams

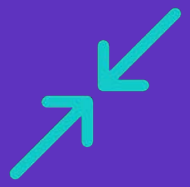
Public or non-public universities



Small and medium-sized companies

Non-governmental and civil society organizations

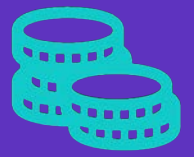
Special Emphasis



Interdisciplinary Dimension

Scientific Qualifications

Industry Partners



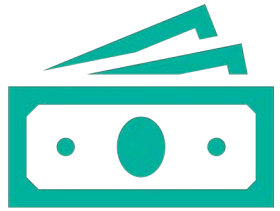
Economic and Social Dimension

German Egyptian Research Fund (GERF)

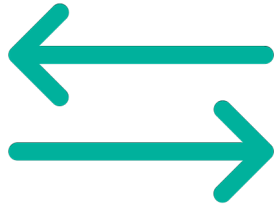
Funded Areas and Budget

Applicants are particularly encouraged to submit proposals in the following fields

Food Production and Food Safety,
Management of Water Resource,
Renewable Energy,
Environmental Research,
Material Sciences & Nanotechnology: Risk Assessment and Impact on man & Environment,
Robotics and Mechatronics,
Information & Communication Technology (ICT),
Transportation and Urban Planning



200,000 Euro
Max for each joint project



EUR 100,000
Max for each side (German & Egyptian)

24 months
Max Duration

German Egyptian Research Fund (GERF)

Call Example

Federal Ministry of Education and Research

STDF

Federal Ministry of Education and Research
Announcement within the framework of the Federal Government's Strategy for the Internationalisation of Science and Research
Fourth joint announcement by the Science and Technology Development Fund (STDF)
of the Arab Republic of Egypt
and the Federal Ministry of Education and Research (BMBF)
of the Federal Republic of Germany
of regulations governing the funding of joint innovative projects in the field of applied research
through the "German-Egyptian Research Fund" (GERF)

16 February 2015

1. Funding purpose and legal basis

1.1 Funding purpose

On the occasion of the closing event of the "German-Egyptian Year of Science and Technology 2007" in Berlin, the German Federal Ministry of Education and Research (BMBF) and the Egyptian Ministry of Scientific Research (MoSR) agreed to establish a German-Egyptian Research Fund (GERF) for the support of joint application-oriented research projects.

With the aim of promoting bilateral research cooperation between the two countries in areas of mutual interest, grants are to be provided to give researchers - including young scientists - an opportunity to address new areas of scientific research. Research results generated in these projects are to be developed into concrete applications. In addition, a further aim of the joint research fund is to help scientific networks to apply for funding under the EU's HORIZON2020 Research Programme or under national funding schemes.

The STDF and the BMBF announced three open calls for proposals under the GERF in 2008

Clarivate™

U.S. - EGYPT JOINT BOARD ON S&T COOPERATION

What is it?

NATIONAL ACADEMY OF SCIENCES

DEPARTMENT OF STATE
UNITED STATES OF AMERICA

وزارة التعليم العالي والبحث العلمي – مصر
Ministry Of Higher Education & Scientific Research -Egypt

USAID
FROM THE AMERICAN PEOPLE

Arab Republic of Egypt
Ministry of Foreign Affairs

STDF
Science and Technology Development Fund (STDF)

U.S. - EGYPT JOINT BOARD ON S&T COOPERATION

Objectives & Governance

Objectives

Objective 1
Strengthen scientific and technological capabilities between the two countries

Objective 2
Expand relations between the two scientific and technological communities

Objective 3
utilize science and apply technology to exchange ideas, information, skills, and techniques

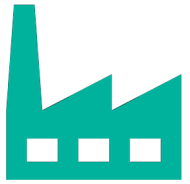
Objective 4
Collaborate on scientific and technological endeavors of mutual interest to **promote economic development**

U.S. - EGYPT JOINT BOARD ON S&T COOPERATION

Eligibility

U.S. Researchers

Public or non-public universities



Private sector companies

Full- time affiliation Egyptian Researcher

Public or non-public universities

U.S. - EGYPT JOINT BOARD ON S&T COOPERATION

Priority topics

Agriculture

Animal health, including prevention, detection, and response to livestock diseases, Smart agriculture and irrigation including translational research into water issues related to smart agriculture, with a focus on agriculture technologies and water irrigation, reuse, and management

Health

Infectious diseases and immunology, with a special interest in anti-microbial resistance and translational research that strengthens prevention, detection, and the management of disease in humans including zoonotic diseases, Cancer, with a special interest in translational research that can advance prevention, detection, or clinical care

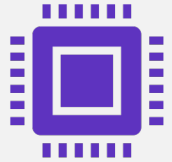
Energy

New trends in renewable energy, Energy storage and efficiency, including photovoltaic systems use and recycling, mini and micro-cogeneration, energy flexibility quantification, and opportunities for smart charging and vehicle to grid application, Production and use of oil, gas, and coal

Water

Impacts of sea-level rise, with a focus on innovative coastal engineering and advanced technologies to mitigate saltwater intrusion, Groundwater resources - innovative exploration techniques and research on groundwater resources, with a focus on the Western Desert, Desalination technology, including applications of renewable energy powered

Other



Machine learning/artificial intelligence applications in one of the above areas (agriculture, health, energy, or water)

U.S. - EGYPT JOINT BOARD ON S&T COOPERATION

General Guidelines

English	The joint Board reviews the applications and notify about results	Priority for inter-disciplinary research in the 4 focus topics
Time Deadline per call	The project cannot be further funded by U.S. or EG other sources	Do not involve Ammonium nitrate and calcium ammonium nitrate
At least one Egyptian and one U.S. partner	One project per PI or Co-PI in 2 cycles	No clinical trials involving human subjects
Authorization by affiliated institution	Clarify relevance in four focus topics	research on vertebrate animals must get approval from relevant institution

U.S. - EGYPT JOINT BOARD ON S&T COOPERATION

Proposal Structure

- Cover Page
- Table of contents
- Project Abstract
- Prior Project Statement
- Project Description
- Collaboration Description
- Curricula Vitae
- References
- USAID Environmental Compliance Checklist
- Topical Eligibility Limit Justification
- Budget
- Gantt Chart

U.S. - EGYPT JOINT BOARD ON S&T COOPERATION

Budget

200k for each side (U.S. and Egypt total 400k)	Materials, equipment and maintenance	U.S. team can lend EG team equipment and shipping costs can be included
Fund for one year can be carried to other year	Postgraduate or graduate team assistance	Travel only junior scientists also allowed but only for project purposes
Unused should be returned	EG max 20% overhead costs	Salaries of EG team max of 20% of EG budget
Travel cost should be included in corresponding team budget	Facility Building costs are not allowed	EG travel budget max 10% of EG budget

U.S. - EGYPT JOINT BOARD ON S&T COOPERATION

Evaluation criteria

Intrinsic Scientific/Technical Merit and Competence

50%

Scientific novelty & importance

technical feasibility

compliance with environmental ethics

professional background, recognition from peers

Relevance and Significance of International Cooperation

25%

Significance of the international cooperation in achieving balanced mutual benefits

strength of cooperation

prospects for long-term collaboration

Capacity Building

20%

develop scientific resources) in EG and the U.S.

improve the well-being of the Egyptian people

promote the professional development of women and junior scientists

Potential for Application

5%

connect with the private sector to support commercialization

identify new technologies with potential market value

scale up a prototype or process for full-scale production

Evaluation of the Budget

The appropriateness of the proposed budget will also be considered.

The final funding decision for each proposal will be based on the analysis of the U.S. and Egyptian reviews together.

U.S. - EGYPT JOINT BOARD ON S&T COOPERATION

Evaluation process

Parallel peer review process by subject matter experts

Science and Technology Development Fund (STDF)

NATIONAL ACADEMY OF SCIENCES

U.S. - EGYPT JOINT BOARD final decision

Thank you & Good Luck

References

- Elena Kallestinova, PhD, Graduate School Writing Center, Yale University
- Barnard, Stephanie, et al. 2001. Writing, Speaking, Communication Skills for Health Professionals. Yale University Press.
- Booth, Wayne C., Gregory G. Colomb, and Joseph M. Williams. 2008. The Craft of Research. The University of Chicago Press.
- Hofmann, Angelika. 2009. Scientific Writing and Communication. Oxford University Press.
- Zeiger, Mimi. 2000. Essentials of Writing Biomedical Research Papers. McGraw-Hill Companies.
- Williams, Joseph M. 2007 Style: Lessons in Clarity. Pearson, Longman.
- Robert Porter, 2005. “What Do Grant Reviewers Really Want, Anyway?” Journal of Research Administration, April.
- Inouye, Sharon K. and David A. Fiellin. 2005. An Evidence-Based Guide to Writing Grant Proposals for
- Clinical Research. Annals of Internal Medicine, 142:274-82.
- Ferrara J.L. and A.H. Schmaier. 2002. Hematology grants workshop. Hematology American Society Hematology Education Program, 484-9.
- Strunk, William. Elements of Style. Ithaca, N.Y.: Priv. print. [Geneva, N.Y.: Press of W.P. Humphrey], 1918;
- Bartleby.com, 1999. www.bartleby.com/141/.
- www.projectreporter.nih.gov/reporter.cfm.

References

- https://www.uwinnipeg.ca/graduate-studies/docs/scholarships-and-awards/Writing%20a%20Research%20Grant%20Proposal.pdf
- https://writingcenter.unc.edu/tips-and-tools/grant-proposals-or-give-me-the-money/#example1
- https://sigma.nursingrepository.org/bitstream/handle/10755/603374/1_Marshall_L_s22216_1.pdf;jsessionid=8C8DFD73D58F38145AC1E7D75CCE14CA?sequence=1
- ACS Petroleum Fund
- https://sites.nationalacademies.org/PGA/Egypt/PGA_183934
- https://www.daad.eg/en/find-funding/gerf/