

# NSF Review Process: Who, What, Where, When, How

Anna Allen, PhD Program Director, Developmental Systems Cluster (DSC) Division of Integrative Organismal Systems (IOS) Directorate for Biological Sciences (BIO)



Request this document in an accessible format by visiting nsf.gov/accessibility

#### **CONTACT A PROGRAM OFFICER!!**

#### (We are not scary! Promise!)

## A Proposal is Different Than a Paper

#### A Paper is:

- a scholarly pursuit: individual passion, past-oriented, work that has been done
- theme-centered: theory and thesis
- expository rhetoric: explaining to the reader, impersonal tone, objective, dispassionate
- individualistic: primarily a solo activity
- few length constraints: verbosity rewarded
- specialized terminology: "insider jargon"

#### A Proposal is:

- aimed at sponsor goals: service attitude, future-oriented, work that should be done
- project-centered: objectives and activities
- persuasive rhetoric: 'selling' the reader, personal tone, conveys excitement
- team-focused: feedback needed
- strict length constraints: brevity rewarded
- accessible language: easily understood

#### **Essential Documents**

#### NATIONAL SCIENCE FOUNDATION

#### PROPOSAL AND AWARD POLICIES AND PROCEDURES GUIDE





Effective January 30, 2023 NSF 23-1 OMB Control Number 3145-0058 Faculty Early Career Development Program (CAREER) Includes the description of NSF Presidential Early Career Awards for Scientists and Engineers (PECASE)

PROGRAM SOLICITATION NSF 22-586

REPLACES DOCUMENT(S): NSF 20-525



 Directorate for Computer and Information Biolence and Engineering Directorate for STRM Education Directorate for Engineering Directorate for Engineering Directorate for Mathematical and Physical Biolences Directorate for Mathematical and Economic Biolences Office of Intergrative Activities Office of Intergrative Activities Office of Intergrative Activities

Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):

July 27, 2022 Fourth Wednesday in July, Annually Thereafte

#### IMPORTANT INFORMATION AND REVISION NOTES

Deadline changed to the 4th Wednesday of July at 5:00pm local time. Changed from the 4th Monday of July.

New optional single copy document for PECASE eligibility statement

Clarification language added for departmental chair letter supplementary document

Other Important Information

The PL needs to meet all eligibility retents as of the annual destine.
 Orientation requiring the minimum presenting explosiment flature-track and tenue-track equivalent) for eligibility to the program
 Only one annual destine applies to all CAREER submission, regardless of Directorate
 Added guidance on the CAREER programs immediate

Innovating and migrating proposal preparation and submission capabilities from FasiLane to Research gov is part of the ongoing NBF information technology modemization efforts, as described in important Notices No. 147. In support of these efforts, research proposals submitted in Research gov or via Grants gov, and may not be propered on submitted via Research gov or via Grants gov, and may not be propered on submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov, and may not be propered or submitted via Research gov or via Grants gov or via Research gov or via Grants gov, and may not be propered or via Research gov or via Rese

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised NSF Proposal & Award Policies & Procedures Guide (PAPPG) (NSF 22-1), which is effective for proposals submitted, or due, on or after October 4, 2021.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

#### PAPPG +

### + Solicitation



#### Proposal Submission Process: Pl Perspective



### **Merit Review Process**



NSE 08-543	the second second	DK NO. CLOBED SATE FOR EXAMPLES AND EXAMPLES AND AN ANY ANY ANY ANY ANY ANY ANY ANY ANY					NSF PROPOSAL NUMBER	
EAR - PETRO	LOGY AND GEOCI	HEMISTRY		er i pigar man a	90 - C	11	19224	
DATE RECEIVED	NUMBER OF COPI	E8 DIVISION AS	SIGNED	FUND CODE	DUNS# (m)	ment futbers laters	FILE LOCATION	
1.06/2011	3	06830000 EA	н	1975	9481173	12	NAMES OF STREET, STREE	
APLICIPE DESTRUCTION NUMBER (THE MARKED TEXT STATES NUMBER (THE HE 1278533     HE 278533		MARCINO, F. THIS IS MENT BASCO REVENAL			VIAC NONE SOME	TER 10 ANOTHER RECEIPT.		
University of Oreg	non to venon vienes or en Bugene	OULUI BE MHOR	Lef	on the second se	ndandarion in n Eugenie Dregan	CUIDING \$ DIGIT ZP	COME	
8032235080	A TON GODE IF REDARD.		Emp	pene, OR. 97483	5029			
NAME OF PERFORMING DROWNZATION, IF OPPERENT FROM HODVE			ADDRESS OF REAFERMANS ORGANIZATION, # DIFFERENT, NOLUBING + DIOT 2P DODE					
PERFORMENT OF ICAN	MERTON CODE JE NORTH	1						
	tais of magma ge d volatiles in the	The generation in warm-wish subflaction series: A in the Caucade arc Child an over the Statement at Article Caucade and Child an overlap at Article Caucade and Articl			BACH HELVILE	ov related free answer freedom. No.		
Colorest and a second second second	TATION IN A REAL PROPERTY.	the state of the second second second						
CHECK APPROPRIATE DISEASES INVESTIGATION CONCLOSURE OF A DISEASE PROPERTY AND DISEASE PROPERTY AND DISEASES AND ADDRESS PROPERTY AND ADDRESS PROPERTY AND ADDRESS PROPERTY AND ADDRESS PROPERTY ADDRESS ADDRESS PROPERTY ADDRESS PROPERTY ADDRESS ADDRESS PROPERTY ADDRESS PROP	полтон рис кар доргина иститар рис неудара иноматтри работар да Пемлот она имарона со в необ и и неудар била Geological Sciences	AL MELLINES ANY OF 102.14 102.15 102.15 0.0514 Frito POSTA	AIC#055	Diversion Bucket Diversion Bucket Diversion Bucket Diversion Bucket Birds Actual Diversion Bucket Diversion	CH GHS HS 7 SOL COOMPANY IVE CH SAMPHOSE CH S REQUIRE	Hange Balgeris hav 18 kgs Over ACTIVITEE DOLARY STIELE GRAMIECS AS 5 FCR PROPORTION	Web familier PACDUR/THEE RWGLVED ERE EDWCT 000/CH HMET VTCH (BMG 10.11)	
осса, деносных ника Пакадина ника Пакадина ника Пакадина ника Пакадина ника Пакадина на на под соносности оссаните соносности под соносносности под соносносности под соносносности под соносности под соносности под соносности под соносности под соносности под соносности под соносносности под соносносности под соносносносносносносносносносносносносно	nacros pro ca como a contras por evulucion motorelinario pro nacionali de anor cont maciono con contra e Anuano fuetor Geological Sciences	AC NELLER ANY OF	AB04055	Director base Director base Director base Director base (3PS r.C.z.) Director base (3PS r.C.z.)	CTB (BPS) H3.7) 507	Hanan Balgeris hav Ris koo Gale Achteri elle Collar e Shiga Galanti coll Ale Shiga Michele Antol Fille Michele Antol	WE SHE NODETHE WOME BE SHOT OLD HE SHOT OLD	
оср. Алтеритика В население пунка В население пунка В население такот в л В население	положной слад сонтупа Астична рай мисло Астична рай врем на да да — Джиат сама има коло на весон накото в коло с Geological Sciences	AL RECORD ANY OF INCLUE	ARC#155	Distance to the Distance to the Distan	CTI (BES H2.7) SERT L CODERNITIVE CN SERVICES CN S RECEIPED	Annan Kalpola hau Na ko Ow ACTIVITEE COUNT CHEN GRANICS AN DISC MAGNER OVER	WET NOW DRO LO II	
оссрадите сонската точка в настояние на точка в настояние точката в настояние точката в настояние точката в настояние точката и чертерност долже точка настояние запазани запазание запазание запазание запазан	полтон рака са д советно Астичта раке на устана на кончатата о раке са да на совется на кончатата на совется на конча на кончата така Geological Sciences	AL RECEIPTION AND A STATES AND	ARCHISS ARCHISS REI 97 Degree	Distribution Denotes Sole Distribution Better Sole Distribution Better Resources Distribution References Sole	CTR (STR 1627) SIN TO THE COMPANY CONSERVATION CONSERVATION CONSERVATION	ничан Бабрил Наи Коло Они Асполтев соци и тово балински на гово Калински на гово на инболов кото Бастоле и	www.faultar microsoftwaler mycluvato ether Enhich colucter ether trade (pind up in 1) ether trade (pind up in 1)	
оср. личенных висолеем има висолеми има висолеми има висолеми има висолеми има висолеми има има личе улические учительна има висолеми има зап. Зав. 4602 замес утисо зап. 346.4602 замес утисо тисто и има зап. 346.4602 замес утисо тисто и има зап. 346.4602 замес утисо тисто и има зап. 346.4602	Induction (and call) coloring Activities (and investigation Activities (and index actives and and index actives and and active actives and active must construct former Geological Sciences	AL INCLUSION AND A STATE OF A STA	AIC#155 AIC#15	STED RULP     Description Statem     Description Statem     Description Statem     Description Statem     Section 201	CTE (SPSLIG2) SON IF (SPSLIG2) SON DEADWORLD CONDENDMINIST CON	ничан Байрить Наси На кра Ина Астичт ван социн и стара (Алитиса) на стара и Молгра Ина Еветон и стара алекраниса	ener funder Incolaritmette metolevelo energi kinder obeden energi kinder johng och i tel Address	
ОССА, АРРОПИИ В ВОЛЛОНИИ ОТ В ВОЛЛОНИИ ОТ РИСТИКОВ СТАЛИИ В ВОЛЛОНИИ ОТ В ВОЛЛОНИИ ОТ РИСТИКОВ СТАЛИИ РИСТИКОВ РИСТИВ	Inderten gene data contrense Antonias per revolucion personali non la gene hitala al Dieven non secala pola inden e menanistica inden e menanistica inden e Geological Sciences P	AL INCLUES ANY OF INCLUE STATUS INCLUES ON OF INCLUE STATUS INCLUES ON OF INCLUES ON OF Examples OF INCLUES ON OF INCLUE	ALCAESS ALCAES	I STO BLOK Dester Salar Genote Salar Dester Salar Dester Salar Set Can Institute Salar Salar Salar Salar Salar Salar Salar	on period and a second	ничан Бариль нач На кро Лин Астичтикан социки стира облагности на стира имогра истор Бастоле и стей житериньова	www.hunter www.country.ee.www.wo esec.com/resources energy.er.com/geng.com/ energy.er.com/geng.com/ energy.energy.ee.com/ ener	
окраличение и виденски и виденски и виденски и виденски и виденски и виденски и виденски и виденски и виденски и виденски	Inductive uses uses contreve activities area revuluation heroward from professional activities of Development and provide the activities of Development Activities Geological Sciences P	AL INCLUES AN OF	ALCAUSE ALCAUSE ML 97482 005 17 Depte 91	STED BLLOW     December Sector     Developer Sector     Developer Sector     Developer Sector     Developer Sector     Developer Sector     Developer Sector     Sector     Sector     Sector     Sector     Sector     Sector	n desinity to construction to several to several t	- Чанат Вайраль Кан. 18 мар Они	www.humler microsoftware www.web gelig privati polyging (a () web Active	
онда, читерствии в валичной чите о отс. социали от реализации от в наличи от в наличи от в наличи от в наличи от от от от от от от от от от в наличи тот от от от от от от от от от от от от от от от	Induction parts uses and the parts of the second se	AL INCLUES AN OF	Alloritiss Alloritiss Des of Depres 09]	Site BLLOW     December Status     Developer Status     Developer Status     Developer Status     Developer Status     Developer Status     Developer Status     Status     Status     Status     Status	chi gera lea y doi in te la coordivente chi belovicasi chi b	- Чанат Вайраль Кан. 18 кор Оне - истичтик социн и тика бани социн и тика бани социн и тика бани социн и тика бани социн и Бастичк К	WAR ANNUE MCDUR THEE WAS WER SHE EXECT OD/OF HEET KICK (DAY) IS 11 HE ADTHE	
COLD. APPOINTS. III. III. COLD. IIII. COLD. IIII. COLD. IIII. COLD. IIII. COLD. IIII. COLD. IIII. COLD. IIIII. COLD. IIIIII. COLD. IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Induction years use a control of Anthropological Anthropological Induction Anthropological Anthropological Induction Control Anthropological I	A INCLUES ANY OF THE LET AL AN	ALCAUSE ALCAUSE BL 97-863 States 91 Depter 91	Light Bruch Control State Control State Control State Control State Information (94) 6.0.3 Control State (94) 6.0.3 Control State (94) 6.0.3 Control State (94) 6.0.3 Control State (94) 6.0.4 Control State (94) 6.0.4 Contr	en gesting y	ника Тайрал Кана 19 кол Оне инститита: солит и учира салит солит и учира салит солит и учира салит солит и расстите та Бастиче та ос Ф антерльева	WAR NAME INCOURT HEEL WALL NED GREET HOLD BROOK IN HEET HOLD BROOK IN HEAT ADDRES	

Note that this varies across NSF

### **Merit Review Criteria**

#### • Intellectual Merit (IM): the potential to advance knowledge

#### • Broader Impacts (BI):

the potential to benefit society and contribute to the achievement of specific, desired societal outcomes



### **5 Review Elements**

- 1. Will the work advance knowledge, and benefit society?
- 2. Is the work creative or potentially transformative?
- 3. Is the work plan sensible, and how will they know if they're successful?
- 4. Is the team qualified?

5. Do they have adequate staff support and facility resources?

### **Structure Your Proposal to Address These 5 Review Elements**

#### 1. Build a compelling introduction and project description

- this is basically a statement of the Intellectual Merit. Catch the reader's attention immediately. State up front what you want to do, and why it's exciting and important

RE2: is the work creative/ transformative?

RE1: how will this

advance science?

- lay out your specific **hypothesis** to be tested. Explain your compelling observations and the work it will take to develop a hypothesis (a 'pilot' type study)

- explain why previous studies have been insufficient to address this research question and how your research methods are different.

RE3: is the work plan clear?

 explain why your field site (or experiment or model) was chosen for the study.

### **Structure Your Proposal to Address These 5 Review Elements**

#### 2. Lay out a clear work plan, timeline, and role for each participant

- draw out a timeline, with tasks

 explain how each analysis or model connects to your hypotheses

RE4: is the team qualified to do this?

RE3: is the

work plan

clear?

- clarify the specific role of each investigator + student + postdoc
- show that the work is feasible within your timeline

RE5: do they have the right lab and collabs?

- include letters of collaboration and money in the budget if needed
- use the Facilities, Equipment, & Other Resources section wisely

### **Broader Impacts: Benefitting Society**

#### Teaching, training, and learning (undergrads + grad students)

Broaden participation of underrepresented groups Build or enhance partnerships (internationally, or with other agencies)

Broad dissemination to enhance scientific + technological understanding Enhance infrastructure (labs, equipment, + work in developing countries)

Local impacts (policies @ state + local level)

### **Advice on Broader Impacts**

- It's not a formula
  - Do something that interests you, has measurable outcomes, and matches the time you are willing to devote
  - Go above and beyond what you are already paid to do
- Ask for money if you need it
- Use existing infrastructure, as appropriate
  - But...give, as well as take
  - Realize that institutions certify to support your efforts
- Ask for help with assessment
- Consult https://www.researchinsociety.org/



Advancing Research Impact in Society

## Who is your audience?

- Ad Hoc reviewers
  - Experts in your specific area
  - You should have recommended 4-5 reviewers
- Panelists
  - Generalists in the programmatic area you are submitting to
  - E.g. development biologists (both plant and animal)

# What is co-review and how does it happen?

Science is more and more integrative.

Programs across NSF are receiving proposals that are at the interfaces of current funding program.

- Program Directors regularly reach out to <u>other</u> programs to inquire about the potential to co-review a proposal.
- Co-review:
  - Have proposal reviewed in 2 panels
  - Review proposal in 1 panel but with program-specific ad hoc reviewers
  - Review proposal in single-panel with PDs from both programs present to pose any program-specific questions

### **Become an NSF Reviewer**

- Peer review process depends on qualified reviewers from the academic, industrial, and government sectors.
  - Provide helpful advice on the merits of proposals and constructive comments to proposers that strengthen their projects.
  - Learn about:
    - Peer review process
    - Common problems with proposals
    - Strategies to write strong proposals
  - Meet colleagues and NSF program officers
- Send an e-mail to the PO of the program(s) that fits your expertise
  - Introduce yourself and identify your areas of expertise
  - It is most helpful if you also attach a 2-page CV





#### **Goal of a review:**

Provide fair, consistent and constructive feedback.
 Avoid unintentional biases.

#### How to Provide Constructive Feedback:

- 1. Read the merit review criteria before you read the proposal(s)
- 2. Take notes when reading the proposal
- 3. Focus on strengths and weaknesses with respect to the review criteria
- 4. Include specific and concrete examples
- 5. Critically read your review (when done)
- 6. Allow sufficient time to read the proposals and write the reviews.

THE ART AND SCIENCE

OF REVIEWING

PROPOSALS

THE ART AND SCIENCE OF REVIEWING PROPOSALS

#### **Structure to Give Constructive Feedback:**

- 1. Provide a 1-sentence summary of the proposal
- 2. Discuss the Intellectual Merit- Strengths and Weaknesses
  - Every comment is supported by specific examples
- 3. Discuss the Broader Impact- Strengths and Weaknesses
- 4. In the summary section, tell us whether or not you believe the proposal is competitive and why.

Apply structure and consistency to your reviews. Use the same evaluation criteria for all proposals.

Think about what kind of feedback **you** would want to have!

The Art and Science of Reviewing -

https://new.nsf.gov/od/oia/merit-review-orientation

https://tipsforreviewers.nsf.gov/

## THE ART AND SCIENCE OF REVIEWING PROPOSALS

- Read the merit review criteria before you read the proposal(s), decide how you will apply the criteria, and stick to them.
- Do not shift your criteria as you go from evaluating one proposal to the next, and do not include extraneous data or criteria.
- Take notes when reading the proposal.
- Do not include a lengthy summary of the proposal in your review!!!
- Be constructive in your feedback; is this the type of review you would like to receive?
- List strengths and weaknesses with respect to the review criteria.
- In the summary section of your review, tell us whether or not you believe the proposal is competitive <u>and why</u>.
- Include concrete examples from the proposal in support of the points in your review.
- Look for signs of the impact of cognitive biases in what you write and strive to mitigate these.
- If you are reviewing multiple proposals, are your reviews consistent and objective?
- Think of alternative views and consider whether they are justified based on facts.
- Play a devil's advocate to your own assessment.
- Review your notes.
- Take time, pause, and reflect on your recommendation.
- Critically read each review after you have written it; ask yourself whether each judgment is clearly
  justified in the text of the review.
- Be accountable to yourself and imagine justifying your decision to others.

# The Role of the Program Director in the Proposal Process

#### Before Proposal Submission

- Read 1-pager from PI
- Guide PI on fit of the proposed research to a program's research priorities

#### After Proposal Submission

- Read submitted proposal
- Identify ad hoc subject-area expert reviewers (if needed)
- Manage the discussion of the proposal during panel (if in panel)

#### After Panel Review

- Make holistic decisions on proposals panel's advisory recommendation, Program's portfolio balance, & NSF's stated priorities
- Discuss reviews of the proposal with the PI
- Provide feedback on what drove the panel's placement

#### **CONTACT A PROGRAM OFFICER WHEN YOU...**

- have a question about research fit
- want to serve as a reviewer
- get a new position and have new contact info
- have questions regarding your reviews
- or any other question!



