

January 11, 2021

## **NDSU Researchers publish research about bio-based replacements to fossil fuel plastics compounds**

NDSU Coatings and Polymeric Materials Chair and Professor Dean Webster, NDSU Chemistry and Biochemistry Professor Mukund Sibi, and NDSU Chemistry and Biochemistry PhD candidate Catherine Sutton recently published research about bio-based alternatives to bisphenol-A (BPA) in the ACS Sustainable Chemistry & Engineering journal.

BPA is an organic compound made from fossil fuel sources. The industrial chemical has been used to make plastics and resins since the 1950s and products made with it are cheap to make, clear, flexible, and strong. BPA can be found in a variety of products including water bottles, storage containers, and sports equipment and it's also widely used in the linings of food and beverage cans and in sales receipt paper. It's one of the most commonly synthesized chemicals today with more than 6 million tons created in 2018 alone.

However, studies since 2008 have shown that BPA mimics estrogen in the body and has negative impacts on our endocrine systems. Some retailers have withdrawn products made with BPA and the search for BPA-free plastics has led to research along similar alternatives such as bisphenol S and bisphenol F. However, the safety of these fellow fossil fuels alternatives is still unknown.

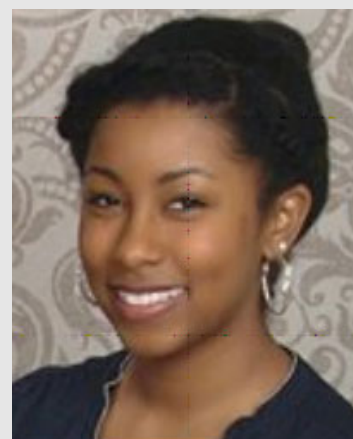
The NDSU team set out to create BPA alternatives that were derived from biomass feedstocks versus fossil fuels. They created a series of new diols (organic chemistry building blocks) from readily available feedstock material hydroxymethyl furfural (HMF).

HMF is an organic compound formed by the dehydration of certain sugars. It's found naturally when sugar-containing feedstocks are heated and caramelization occurs and it occurs naturally in coffee, dried fruit, and honey as well as byproducts like high-fructose corn syrup.

Analysis of the new diols for endocrine activity and cytotoxicity was performed and three HMF-based diols were identified given their lack of negative affect on endocrine activity. These potential replacements for BPA are now being evaluated in the NDSU laboratories for their applications in coatings and polymers.

"These diols have a high potential as starting material for a number of polymeric materials," commented main researcher Catherine Sutton. "We are optimistic as we move forward with polymerizations using our biomass-derived diols."

By finding natural diols that did not have the same negative biological reactions as BPA, the team's research is unique. "Finding replacements for bisphenol-A is a big deal these days," added Mukund Sibi. "We have made new safer diols that have been initially assessed for their biological activity, which really sets our work apart from others in the field. We believe we have an alternative to BPA that is safe and doesn't rely on fossil fuels, which is an additive benefit."



NDSU Chemistry and Biochemistry  
PhD candidate Catherine Sutton

Funding was provided by the ND Center of Research Excellence (CORE) Biobased Materials Science and Technology (BiMAT) and supported through in-kind and financial contributions of AkzoNobel. The project was also supported by the ND EPSCoR Center for Sustainable Materials Science (CSMS).

For more information, see *Novel Biobased Furanic Diols as Potential Alternatives to BPA: Synthesis and Endocrine Activity Screening*. Catherine A. Sutton, Alexander Polykarpov, Keimpe Jan van den Berg, Alexander Yahkind, Linda J. Lea, Dean C. Webster, and Mukund P. Sibi. *ACS Sustainable Chem. Eng.* 2020, 8, 51, 18824–18829, December 14, 2020. <https://doi.org/10.1021/acssuschemeng.0c08207>.

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## Novelution IRB Module Now Required for New Protocols

New Protocol submissions are now required to be submitted via the Novelution Institutional Review Board (IRB) module. If your protocol was originally submitted using the previous IRB forms, you may still submit amendments and continuing reviews using the “Legacy Forms” available on the [Forms page](#).

- [Click here](#) for more information about the Novelution platform or to view recorded demonstrations of the software.
- [Click here](#) to log in to Novelution.

### Quick Tips:

- Novelution automatically integrates with the CITI program to verify completion of human subjects training. To ensure accurate reporting of your completed training, update the CITI program with your NDSU email as your primary email account OR, in Novelution, add your CITI email address by clicking 'Edit User Profile' under Profile and Settings.
- Wondering about the status of your IRB submission? Check the Requirements panel within the Protocol application to check on the current status of the protocol submission.

For questions about Novelution, contact [ndsu.novhelp@ndsu.edu](mailto:ndsu.novhelp@ndsu.edu). For questions related to your IRB protocols or training, contact [ndsu.irb@ndsu.edu](mailto:ndsu.irb@ndsu.edu).



### Congratulations to all award recipients from November 2020!

View the complete list online: [PDF](#) | [Excel](#)

The awards listed are externally funded projects. Each month one of the RCA Updates will include prior month awards.

[See Award Reports from previous months >>](#)

## Reminder from the NDSU Attending Veterinarian

The NDSU Guidelines on [Adverse Event](#) Reporting state, “Animals that die unexpectedly or are unexpectedly euthanized in a research study must be submitted to a Veterinary Diagnostic Laboratory for Necropsy. Submission of an animal to a diagnostic laboratory should be done in consultation with the Attending Veterinarian.”

The requirement to submit animals for necropsy applies to animals that die unexpectedly. An unexpected death may also require an [Adverse Event report](#) be submitted to the AV / IACUC offices.

The NDSU [Veterinary Diagnostic Laboratory](#) (VDL) is a full-service facility that can offer necropsy services. The VDL [diagnostic fees](#) will be charged to the researcher. We recommend that Principal Investigators write diagnostic fees into their grant proposals to cover this cost.

As a trained pathologist, I can tell you that in most circumstances it is not possible to diagnose an animal death by simply looking at it; internal organs need to be examined grossly and microscopically. Necropsies are done to look for trends in animal deaths and to avert any disease outbreaks. Animal carcasses should NOT be frozen prior to necropsy, they should be refrigerated and submitted within 24 hours. Please contact me with any questions or concerns.

Neil Dyer  
NDSU Attending Veterinarian  
[neil.dyer@ndsu.edu](mailto:neil.dyer@ndsu.edu)

## InfoEd SPIN Funding Opportunity Database



On January 1, NDSU transitioned to a new funding opportunity database subscription: SPIN by InfoEd Global. SPIN is free for current NDSU faculty, staff, and students.

For more information, visit the [SPIN page](#) on

the RCA website. If you have questions, please contact [ndsu.researchdev@ndsu.edu](mailto:ndsu.researchdev@ndsu.edu).

## NIH / eRA Will Require the Use of Login.gov to Access eRA Commons, ASSIST, IAR and Commons Mobile in 2021

NIH / eRA and its partner agencies are now expanding the use of two-factor authentication via login.gov for all external user communities that access eRA's external modules including Commons, Commons Mobile, Internet Assisted Review (IAR) and ASSIST. By September 15, 2021, NIH / eRA and its partner agencies will require all external users to only use login.gov to access eRA's external modules including Commons, Commons Mobile, IAR and ASSIST.

- [More information about this change >>](#)
- [Step-by-step instructions for the new two factor log-in >>](#)

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### Upcoming Limited Submission Program Deadlines

[Limited submission grant programs](#) are those that indicate a limit on the number of proposals that may be submitted by an institution for a particular deadline. A selection process becomes necessary if more applicants express interest in applying than NDSU is allowed to submit to the grant program. Email notifications of interest to [ndsu.researchdev@ndsu.edu](mailto:ndsu.researchdev@ndsu.edu).

- [NSF: EPSCoR Track 4 Research Fellows](#)  
*Notification Deadline: 01/13/2021*
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*Notification Deadline: 03/09/2021*

There are a number of limited submission grant programs with upcoming agency deadlines for which we did not receive any notifications of interest. For those interested in applying to the programs listed below, approval to move forward with

a full proposal submission to the funder will be given on a first come, first served basis. Email notifications of interest to [ndsu.researchdev@ndsu.edu](mailto:ndsu.researchdev@ndsu.edu).

- [DOE: Scientific Discovery Through Advanced Computing - Partnerships in Basic Energy Sciences](#)  
Agency deadline: January 19, 2021
- [DOE: Materials and Chemical Sciences Research for Quantum Information Science](#)  
Agency deadline: January 27, 2021
- [CDC: Reducing Inequities in Cancer Outcomes through Community-Based Interventions on Social Determinants of Health](#)  
Agency deadline: February 10, 2021
- [NEA: Grants for Arts Projects](#)  
Agency deadline: February 11, 2021
- [NSF: Ethical and Responsible Research](#)  
Agency deadline: February 22, 2021
- [USDA-NIFA: Biotechnology Risk Assessment](#)  
Agency deadline: February 24, 2021
- [NSF: Scholarships in STEM](#)  
Agency deadline: April 7, 2021

## **DoD CDMRP: Breast Cancer Research Program**

The Department of Defense (DoD) Congressionally Directed Medical Research Program (CDMRP) Breast Cancer Research Program (BCRP) is currently accepting applications for five award mechanisms:

- Breakthrough Award Levels 1 and 2
- Breakthrough Award Level 3
- Breakthrough Award Level 4
- Era of Hope Scholar Award
- Innovator Award

For more information, view the [individual program announcements](#).

*Pre-Application deadline: March 11-12, 2021, depending on program*

## **FFAR: 2021 New Innovators in Food and Agriculture - Limited Submission Program**

Limited submission grant programs are those that indicate a limit on the number of proposals that may be submitted by an institution for a particular deadline. A selection process becomes necessary if more applicants express interest in applying than NDSU is allowed to submit to the grant program.

**FFAR New Innovators : Notify RCA by 01/28/2021, 5:00 p.m. if you are interested in submitting to this program.**

In anticipation of the 2021 request for applications being released, we are requesting notifications of interest for the Foundation for Food and Agricultural Research (FFAR) New Innovator in Food and Agriculture Research Award. The New Innovator in Food & Agriculture Research Award provides early-career scientists the investment needed to propel them into successful research careers. These awards allow the grantees to focus exclusively on research without the pressure of securing additional funding.

Eligible faculty members are in the first three years of their scientific career and are within eight years of receiving their Ph.D. *Faculty with significant research experience prior to obtaining a faculty position will not be considered.* Eligible candidates must also conduct research that aligns with one of the FFAR Challenge Areas:

- Advanced Animal Systems
- Health-Agriculture Nexus
- Next Generation Crops
- Soil Health
- Sustainable Water Management
- Urban Food Systems

**LIMITED SUBMISSION:** NDSU may only nominate one researcher.



## **HRSA: Emerging Issues in Maternal and Child Health - Limited Submission Program**

Limited submission grant programs are those that indicate a limit on the number of proposals that may be submitted by an institution for a particular deadline. A selection process becomes necessary if more applicants express interest in applying than NDSU is allowed to submit to the grant program.

**HRSA MCH : Notify RCA by 01/28/2021, 5:00 p.m. if you are interested in submitting to this program.**

This funding opportunity [[HRSA-21-080](#)] is a mechanism to support capacity-strengthening activities that will improve state- and / or local-level organizations' abilities to address emerging issues that threaten the health and well-being of MCH populations in an effective, timely manner. For the purposes of this opportunity, MCH populations include the following groups: women, children (birth to 21), children with special health care needs (CSHCN), adolescents, and families. Recipients will implement a set of activities under at least one of the three capacity strengthening areas below and through these activities address an emerging issue specific to their state or local community.

### Capacity Areas:

1. Data and Informational Systems
2. Workforce Development
3. Strategic Partnerships

“Emerging issues” refers to issues that affect MCH populations at an increased rate, for which there is new knowledge or an increased level of awareness of, or there are new approaches to solving the issue. You will select an emerging issue specific to the needs of your state or local community. Examples of emerging issues include, but are not limited to, increasing rates of opioid and other substance use disorders, emergent environmental health threats, persistent or increasing disparities in maternal mortality, inadequate availability of and access to behavioral health services, disparities in access to health services for CSHCN, and declining immunization coverage. You are encouraged to utilize your state’s needs assessment report at the [Title V Information System \(TVIS\)](#) to inform the selection of an appropriate emerging issue.

**LIMITED SUBMISSION:** NDSU may only submit one application.

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## Human Animal Bond Research Institute

The Human Animal Bond Research Institute (HABRI) is calling for [research proposals](#) to investigate the health outcomes of pet ownership and / or animal-assisted activity or therapy, both for the people and the animals involved. Proposals should have a strong theoretical framework and focus on innovative approaches to studying the health effects of companion animals on humans within the following broad categories:

- Child Health and Development
- Healthy Aging
- Mental & Physical Health and Wellness

In an effort to help address larger societal challenges, proposals that have potential to impact current public health crises or issues at the forefront of public concern are welcomed. Topics include (but are not limited to) social isolation and loneliness, suicide prevention, addiction, trauma and / or post-traumatic stress, obesity, and heart health. Proposals that address the role of companion animals in the lives of people during the COVID-19 pandemic are also of interest.

While HABRI is interested in studies that focus on the impacts of interactions with dogs, in the interest of further contributing to the scientific field of human-animal interaction, HABRI welcomes studies that focus on interactions with other pet species, which may include (but are not limited to) cats and small animals (rabbits, guinea pigs, birds, and fish) and horses. No invasive procedures will be funded.

*Deadline: February 11, 2021*

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## NEA: Creative Writing Fellowships - Prose

The National Endowment for the Arts (NEA) [Literature Fellowships](#) program offers \$25,000 grants in **prose** (fiction and creative nonfiction) to published creative writers that

enable recipients to set aside time for writing, research, travel, and general career advancement. Applications are reviewed through an anonymous process in which the criteria for review are the artistic excellence and artistic merit of the submitted manuscript. Through this program, the Arts Endowment seeks to sustain and nurture a diverse range of creative writers at various stages of their careers and to continue to expand the portfolio of American art.

*Deadline: March 10, 2021*

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## **NEH: Institutes and Workshops for Educators**

The National Endowment for the Humanities (NEH) has released Notices of Funding Opportunities for three programs focused on providing professional development for K-12 educators and higher education faculty. Pre-recorded informational webinars for each of these programs will be posted to the program pages by January 15, 2021.

### **Landmarks of American History and Culture**

The Landmarks of American History and Culture program supports a series of one-week workshops for K-12 educators across the nation to enhance and strengthen humanities teaching at the K-12 level. Projects employ a place-based approach and are designed to offer educators a unique and compelling opportunity to deepen and expand their knowledge of the diverse histories, cultures, traditions, languages, and perspectives of the American people.

### **Institutes for K-12 Educators**

NEH Institutes are professional development programs that convene K-12 educators from across the nation in order to deepen and enrich their understanding of a variety of topics in the humanities and enrich their capacity for effective scholarship and teaching.

### **Institutes for Higher Education Faculty**

NEH Institutes are professional development programs that convene higher education faculty from across the nation in order to deepen and enrich their understanding of a variety of topics in the humanities and enrich their capacity for effective scholarship and teaching.

Deadline for all programs: March 9, 2021

Optional drafts due February 8, 2021

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## NIH Research Education Programs (R25)

The NIH Research Education Program (R25) supports research education activities in the mission areas of the NIH. There are multiple upcoming R25 program deadlines, some of which are [limited submission programs](#). See below for details.

### **Biomedical Engineering Education** [[PAR-19-215](#)]

Applications are encouraged from institutions that propose to establish new or to enhance existing team-based design courses or programs in undergraduate biomedical engineering departments or other degree-granting programs with biomedical engineering tracks / minors.

*Limited Submission Program: [Notify RCA](#) by 02/15/2021, 5:00 p.m. if you are interested in submitting to this program.*

### **Biostatistics and Data Science** [[RFA-HL-22-09](#)]

This opportunity will support creative educational activities with a primary focus on courses for skills development.

*Deadline: March 8, 2021*

### **Genomic Research for Data Scientists** [[PAR-21-075](#)]

This opportunity will support creative educational activities with a primary focus on research experiences.

*Limited Submission Program: [Notify RCA](#) by 3/9/2021, 5:00 p.m. if you are interested in submitting to this program.*

### **Enhancing STEM Educational Diversity** [[PAR-20-223](#)]

This opportunity will support creative educational activities with a primary focus on courses for skills development and research experiences for undergraduate freshmen and sophomores from diverse backgrounds.

*Limited Submission Program: [Notify RCA](#) by 3/9/2021, 5:00 p.m. if you are interested in submitting to this program.*

## NIJ: Research and Evaluation on School Safety

With this solicitation [[O-NIJ-2021-44008](#)], the National Institute of Justice (NIJ) seeks proposals for rigorous research and evaluation projects to study the root causes of school violence to include the impact and effectiveness of grants made under the STOP School Violence Act. NIJ is particularly interested in examining understudied approaches to improve school safety. Of most interest are anti-violence interventions and threat assessment.

*Deadline: February 22, 2021*

## NSF: EPSCoR Track 4 Research Fellows – Limited Submission Program

[Limited submission grant programs](#) are those that indicate a limit on the number of proposals that may be submitted by an institution for a particular deadline. A selection process becomes necessary if more applicants express interest in applying than NDSU is allowed to submit to the grant program.

**NSF RII Track-4: [Notify RCA](#) by 01/13/2021, 5:00 p.m. if you are interested in submitting to this program.**

The Established Program to Stimulate Competitive Research (EPSCoR) is designed to fulfill the mandate of the National Science Foundation (NSF) to promote scientific progress nationwide. EPSCoR jurisdictions that are eligible for RII competitions are listed in the RII Eligibility table, which can be found [here](#). Through this program, NSF establishes partnerships with government, higher education, and industry that are designed to effect sustainable improvements in a jurisdiction's research infrastructure, Research and Development (R&D) capacity, and hence, its R&D competitiveness. One of the strategic goals of the EPSCoR program is to establish

sustainable Science, Technology, Engineering, and Mathematics (STEM) professional development pathways that advance STEM workforce development.

The EPSCoR Research Infrastructure Improvement Track 4: EPSCoR Research Fellows (RII Track-4) Program [[NSF 20-543](#)] provides awards to build research capacity in institutions and transform the career trajectories of non-tenured investigators and to further develop their individual research potential through extended collaborative visits to the nation's premier private, governmental, or academic research centers. Through collaborative research visits at the host site, fellowship awardees will be able to learn new techniques, develop new collaborations or advance existing partnerships, benefit from access to unique equipment and facilities, and / or shift their research toward potentially transformative new directions. The experiences gained through the fellowships are intended to have lasting impacts that will enhance the Fellows' research trajectories well beyond the award period. These benefits to the Fellows are also expected to in turn improve the research capacity of their institutions and jurisdictions more broadly. Those submitting proposals must either hold a non-tenured faculty appointment at an institution of higher education or an early-career career-track appointment at an eligible non-degree-granting institution.

**LIMITED SUBMISSION:** Only three RII Track-4 proposals may be submitted in response to this solicitation by any single organization in a RII-eligible jurisdiction.

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## **Retirement Research Foundation: Research Grants – Limited Submission Program**

[Limited submission grant programs](#) are those that indicate a limit on the number of proposals that may be submitted by an institution for a particular deadline. A selection process becomes necessary if more applicants express interest in applying than NDSU is allowed to submit to the grant program.

**RRF : [Notify RCA](#) by 01/20/2021, 5:00 p.m. if you are interested in submitting to**

**this program.**

The [Retirement Research Foundation \(RRF\)](#) funds research that seeks to identify interventions, policies and practices to improve the well-being of older adults and / or their caregivers. Preference is given to projects aimed at generating practical knowledge and guidance that can be used by advocates, policy-makers, providers, and the aging network. Of particular interest are:

- interventional trials; translational studies; and health services and policy research;
- projects that build on the investigator's past studies; and
- proposals that include robust dissemination plans, if appropriate, to assure that findings reach audiences positioned to act on them.

**LIMITED SUBMISSION:** Only one proposal / letter of inquiry is allowed per department per grant cycle.

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## **RWJF: Equity-Focused Policy Research**

The [Equity-Focused Policy Research \(EFPR\)](#) grant program seeks to fund a body of research that illuminates strategies and policies that enhance families' equitable access to key resources for supporting their children's healthy development. EFPR grants are guided by a research agenda that focuses on: (1) understanding the sources of inequities in families' access to and use of key resources; (2) identifying and testing innovations to advance equity; and (3) strategies for scaling up policies and approaches that are effective in advancing equity. The agenda addresses three policy areas as providing critical resources for families: (1) access to early care and education (ECE); (2) income supports (such as the Earned Income Tax Credit [EITC] and cash transfer programs) and income generation / replacement; and (3) nutrition supports (such as the Supplemental Nutrition Assistance Program [SNAP]).

There will be an informational webinar for applicants on January 12, 2021 at 2pm.

[Register >>](#)

*Deadline: February 16, 2021; 2pm.*

## University-Industry Demonstration Partnership: Avery Dennison Open Innovation

[Avery Dennison](#) is a global materials science and manufacturing company specializing in the design and manufacture of a wide variety of labeling and functional materials. The company is seeking collaborative partnerships with university or industry researchers on the cutting edge of packaging design, with specific interest in three areas:

- sustainable materials and processes for labels;
- intelligent label, where labels can store and capture information and wirelessly transmit data; and
- digital ID: Provide a unique identification to each label.

With operations in more than 50 countries and 30,000 employees worldwide, Avery Dennison products are used in nearly every major industry.

[Register](#) for this free webinar about how to partner with Avery Dennison for future materials and products that serve an ever-changing marketplace.

Wednesday, January 20, 2021 / 11:00am

[Learn more >>](#)

## SBIR / STTR Webinars from SHARPhub

[SHARPhub](#), an NIH-funded program to assist in translating bioscience discoveries into startup companies, is offering multiple free webinars on SBIR / STTR programs.

**ABC of SBIR / STTR** - Thursday, January 14 from 8:30 am to 10:00 am CST

Learn about whether your research is a candidate for SBIR / STTR federal R&D funding, learn about SBIR / STTR program basics, including program purpose, eligibility, and sources of funding. The goal of this presentation is to provide ample information for attendees to determine if they would like to seriously pursue proposal development and tools to help begin the process.



**REGISTER:** <https://bit.ly/39bu9Yt>

**SBIR/STTR Proposal Prep for NIH** - Monday, January 25 from 8:30 am to 1:00 pm CST

Learn about differences between SBIR and STTR, review how to navigate the NIH's SBIR website to research awarded projects, how to prepare an SBIR proposal, and how to avoid common pitfalls.

**REGISTER:** <https://bit.ly/3fG7h4E>

**Commercializing your research through SBIR / STTR Proposals** - Wednesday, February 10 from 8:30 am to 1:00 pm CST

Learn about essential components of an effective plan, how to find and use cost-effective market research to direct your efforts, supporting documents you will need, and other tips for writing a winning plan.

**REGISTER:** <https://bit.ly/2JfNCvZ>

**Q&A session for NIH workshop attendees** – Thursday, February 4 from 8:30 to 9:30 am CST

SBIR / STTR virtual training attendees will have the opportunity to ask questions to BBCetc consultants regarding their specific proposal. *Please note that you must have attended training on January 14th and Jan 25th to be able to take advantage of this session.*

**Cuss and Discuss** - March 12 from 9 –10:30 am CST

Meet others planning to submit SBIR / STTR proposals to NIH, sharing challenges and learning from others.

**REGISTER:** <https://bit.ly/371phUf>

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Have questions, ideas, or suggestions for the RCA Update?

[Contact Us](#)

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*The Office of Research and Creative Activity (RCA) sends weekly emails to NDSU faculty and staff to provide current information on various topics including funding opportunities, grant program changes, research resources, deadlines, notices, and training.*

*You are receiving this notification through the NDSU official employee listserv or sub-list. The official listserv refreshes after each pay period.*

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