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NIGMS Biomedical Technology Optimization & Dissemination (BTOD) Centers Program

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OUTLINE

- BTOD Program Overview
- Q&A with NIGMS Staff
- Please type any questions related to the webinar in the Q&A chatbox.

NIGMS Technology Development Pipeline

Untested Concept to Broad Utility

Proof of Concept → Prototype → Dissemination

PAR 25-203 (R01)

PAR 27-024 (RM1)



BTOD Program Goals

Optimize

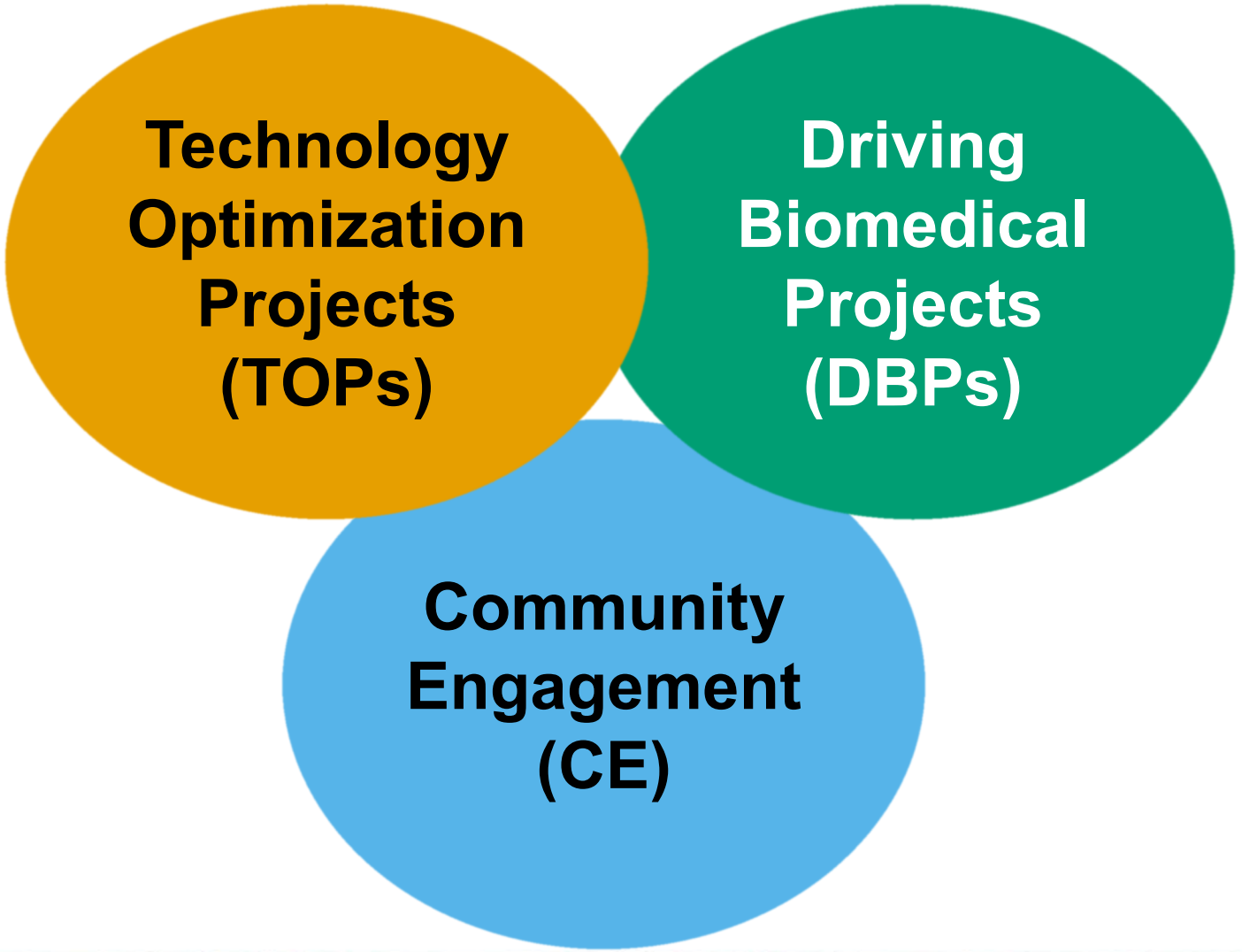
State-of-the-art, late-stage technologies to enable broad use

Disseminate

The technologies for use by expert and non-expert biomedical researchers



Three Integrated Components for Achieving BTOD Center Program Goals



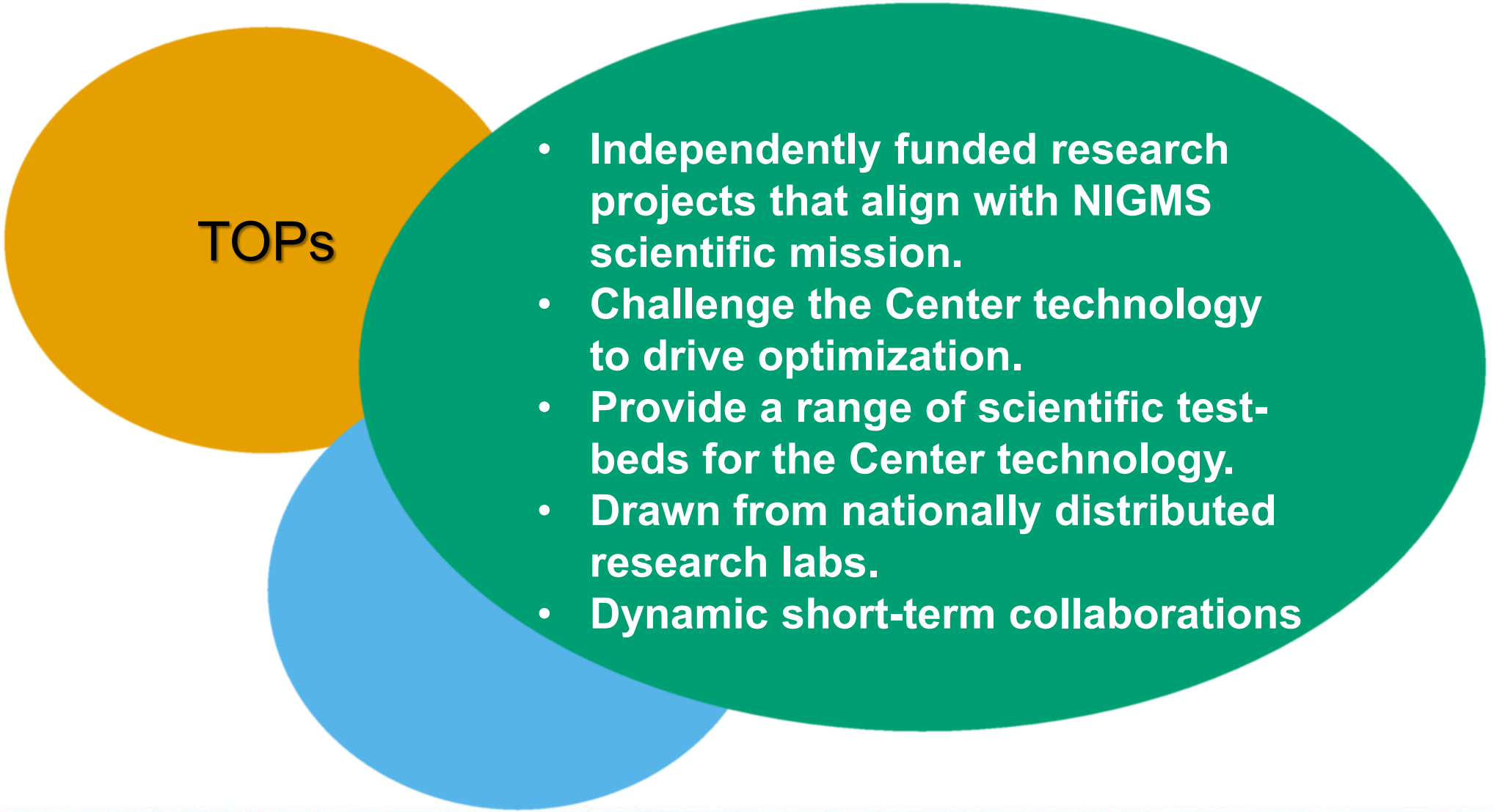
Technology Optimization Projects (TOPs)

- **Central focus of the BTOD center and serve as the foundation for all other Center activities.**
- **Leading-edge, late-stage technologies that are in NIGMS mission.**
- **Variations of a single technology or multiple technologies that support a single goal.**
- **Potential for broad adoption by expert and non-expert biomedical researchers.**

DBPs



Driving Biomedical Projects (DBPs)

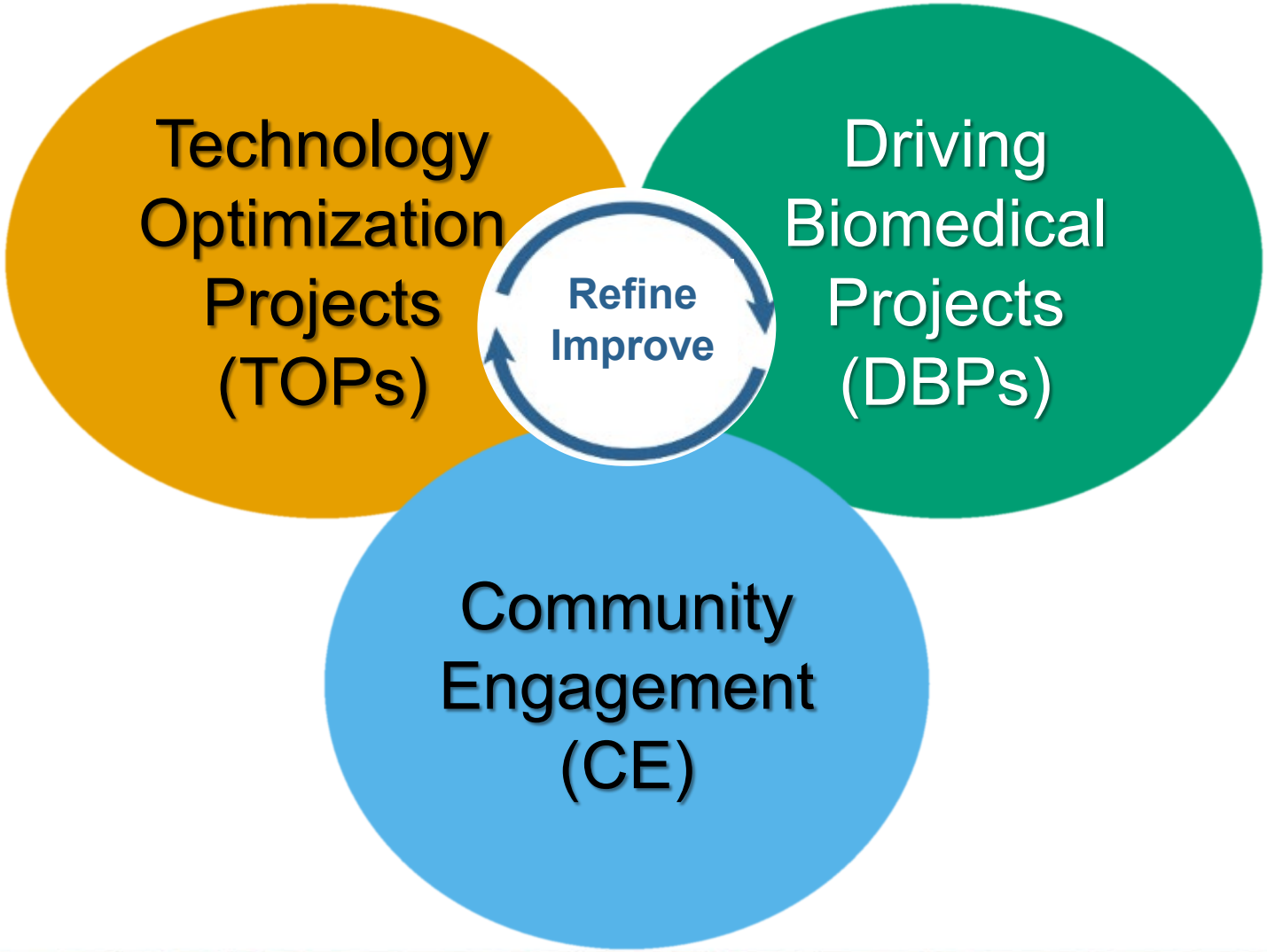


Community Engagement (CE)

- Develop self-sustaining activities to disseminate technologies.
- Host a user-friendly website.
- Provide training for biomedical research communities.
- Engage in technology commercialization.



BTOD Centers Integrate the Three Components



NIGMS Mission

The National Institute of General Medical Sciences **(NIGMS)** supports basic research that increases **understanding of fundamental biological processes** and lays the **foundation** for future advances in disease diagnosis, treatment, and prevention.

NIGMS also supports research in specific clinical areas that affect multiple organ systems, e.g., sepsis and anesthesiology.

- NIGMS-funded scientists investigate how living systems work at a range of levels, from molecules and cells to tissues and organs, in research organisms, humans, and populations.
- NIGMS supports **research and technology development** aimed at understanding general principles, mechanisms, and processes.



Requirements of BTOD Center Technologies

- Current state-of-the-art or unique technologies with demonstrated utility
- Technologies require optimization to make them broadly useful to the biomedical research community
- Potential utility for a variety of biomedical research problems
- Technology Optimization Projects (TOPs) and Driving Biomedical Projects must be in NIGMS mission

Non-Responsiveness Criteria

The following types of BTOD Center applications are non-responsive to this NOFO and will not be reviewed:

- Those that optimize and disseminate technologies primarily for translational or clinical research communities outside the scope of the NIGMS-supported clinical areas (sepsis, wound healing, etc).

- Those that propose user access to mature technologies.

Applications that propose technologies of limited utility to the Biomedical Research community will be low priority for funding.

External Advisory Committee

Each BTOD Center must have an External Advisory Committee (EAC) that meets at least annually and prepares a written report of its recommendations.

- EAC members are appointed by the PD(s)/PI(s) to advise them on future Center directions, particularly in setting priorities for the Center.
- EAC membership should be rotated periodically. The committee chair should be knowledgeable of the Center's technologies and the science it serves but should not be a member of the Center staff or a DBP or Technology Partnership Projects collaborator.
- Other committee memberships should be distributed among scientists with knowledge of the Center's technologies, experts in its application to biomedical research problems, and Center technology users.
- DBP PI membership in the EAC is not prohibited but should constitute a minority of members.
- Members should represent a balance of perspectives, and at least one member should be from a resource-limited institution, IDeA state, or Primarily Undergraduate Institution (PUI).

Potential Technology Areas for BTOD Centers

- Analytical biochemistry and chemical biology tools
- High throughput biochemical methods
- Advanced spatial omics
- Structural biology an imaging methods
- Molecular biology
- Cell manipulation
- Computational methods
- Modeling of molecular and biological systems



Budget

- The maximum budget request is $850,000 in direct costs per year, excluding equipment and consortium F&A costs. Applications requesting more than this amount will not be reviewed.

- Equipment requests are available and expected to vary with the nature of the technology optimization projects proposed. Funds for equipment may be requested in excess of the $850,000 operating limit but should be well justified.

Highlighted outcomes of Active BTOD Centers

BTOD Award	Notable Dissemination Outcomes
Center on Macromolecular Dynamics by NMR spectroscopy, New York Structural Biology Center	• Telluride School on Biomolecular Structure and Dynamics Summer School • Wide geographic distribution of applicants to CoMD/NMR training activities
Center on Probes for Molecular Mechanotechnology (CPMM), Emory University	• Hands-on workshop in Mechanobiology Methods: From Molecules to Cells (M3C)
The GCE4All Center: Unleashing the potential of genetic code expansion for biomedical research, Oregon State University	• Deposited materials at Addgene for distribution to the research community. Addgene is a nonprofit plasmid repository dedicated to improving life science research. • Established partnership with protocol-an online peer-reviewed protocol journal curating and hosting high quality, free access, step-by-step protocols across the life sciences.

Highlighted outcomes of Active BTOD Centers

BTOD Award	Notable Dissemination Outcomes
National Resource for Advanced NMR Technology Florida State University and University of Florida	• Refined protocol for making microcrystalline DNP samples. Protocol disseminated through NMRprobe.org and at the SSNMR Winter School Workshop.
Native Mass Spectrometry Guided Structural Biology Center Georgia Institute of Technology	• Thermo has released two commercial online buffer exchange columns. • Multiple mass spectrometry protocols are free of charge to users on the center's website.
UTSW-UNC Center for Cell Signaling Analysis UT Southwestern Medical Center and the University of North Carolina Chapel Hill	• Launched the LiveCellImageAnalysis YouTube channel, which currently hosts five "how-to" tutorials and has accumulated over 400 views within six months.

Highlighted outcomes of Active BTOD Centers Cont.

BTOD Award	Notable Dissemination Outcomes
National Center for Translational and Developmental Proteomics (NCTDP) Northwestern University	• Short course: Top-Down Proteomics, Top-Down MS Data Analysis, and Visualization. • Nature Webinar: The coming proteoform revolution. The webinar and accompanying article are posted on Nature's website. • Proteoform Thursdays. This meeting frequently hosts upwards of 200 registrants from around the world and is generally hosted on the 3rd Thursday of the month.
MicroED Imaging Center at UCLA University of California Los Angeles	• Held numerous well-attended workshops each year at national meeting and cryoEM facilities, fostering widespread adoption of MicroED. The most recent event was the 7th Challenges in Structural Biology Summit.

Application Submission

- PAR-27-024: Biomedical Technology Optimization and Dissemination Center (BTOD) (RM1-Clinical Trial Not Allowed)

- May/January receipt dates with next receipt date of January 28, 2027.

- Send questions about application preparation to:
  NIGMS_BTODMailbox@nigms.nih.gov



Q&A session with BTOD Point of Contact

Please type your questions in the Q&A Chatbox

Questions after the webinar? Please send them to: NIGMS_BTODMailbox@nigms.nih.gov

NIH National Institute of General Medical Sciences