



**Center for Transformative Research in Metabolism
External Advisory Committee, Virtual Meeting
November 19-20, 2024**

External Advisory Committee Meeting Agenda

<https://alaska.zoom.us/j/88148253936?pwd=gXQzt8QUlJpLQCbbjX44PnYFkvWkNW.1>

Meeting Objectives:

1. Discuss the next steps for the Center's continuation.
2. Core leaders, research project leaders (RPLs), pilot project leaders, (PPLs), and mentors meet one-on-one with EAC members regarding their professional development goals.
3. EAC prepares TRiM's annual evaluation report for NIH.

Meeting Desired Output:

1. Research project and core leaders will make interim and final project reports through formal presentations.
2. Receive constructive guidance and team support for the Center's continuation.
3. Professional development for TRiM's core leaders, RPLs, and PPLs.
4. EAC will write their annual NIH evaluation report to be shared with UA administrative leadership.

Tuesday, November 19 (Day 1)

- 9:00 a.m. *Welcome, introductions, and overview of the EAC meeting agenda.*
Kelly Drew, PhD, Director, Center for TRiM
- 9:10 a.m. *Overview of TRiM Accomplishments and Challenges.*
Kelly Drew, PhD
Denise Daniello, MA, Anya Goropashnaya, PhD, Kriya Dunlap, PhD,
Sarah Rice, PhD, Maegan Weltzin, PhD, and Bernard Laughlin, DO available for questions
- 9:45 a.m. *Administrator input and the COBRE renewal*
Discussion of feedback from UA administrators. Kelly Drew
- 10:10 a.m. *AGS Breeding Colony Update*
Chris Terzi, Research Technician, Animal Resource Center
- 10:30 a.m. Break
- 10:45 a.m. *Research Project Final Reports (30 minutes for each presentation in total, including Q&A)*
PI Vadim Fedorov, PhD, *Post-transcriptional mechanisms of muscle atrophy prevention in hibernating mammals*, Project 1
Mentor: Esther Dupont-Versteegden, PhD

- 11:15 a.m. Oivind Toien, PhD, *Adaptations of sleep and cardiac rhythms in the hypometabolic state of a human-sized hibernator*, Project 3
Mentor: Craig Heller, PhD
- 11:45 a.m. PI Khrys Duddleston, PhD, *Microbial provision of essential amino acids: Protein conservation in hibernation*, Project 2
Mentor/Collaborator: Loren Buck, PhD
- 12:15 p.m. Break (15 minutes)
- 12:30 p.m. *TRiM Core Updates* (20 minutes/presentation, including Q&A)
Admin Core – Kelly Drew and Denise Daniello, MA
- 12:50 p.m. *Health and Metabolism Research (HaMR) Core*
Carl Murphy, PhD, Core Leader & MIF Manager
- 1:10 p.m. *Advanced Instrumentation for Microbiome Studies (AIMS) Core*
Brandon Briggs, PhD, AIMS Core Leader
- 1:30 p.m. *Recess*
- 1:40 p.m. *EAC One-on-One Meetings with RPLs and Mentors* (20 minutes each)
Vadim Fedorov, RPL Project 1
Mentor: Esther Dupont-Versteegden, PhD
([Click here to join](#))
- 2:00 p.m. Khrys Duddleston, RPL Project 2
Collaborator: Loren Buck, PhD
([Click here to join](#))
- 2:20 p.m. Oivind Toien, RPL Project 3
Mentor: H. Craig Heller, PhD
([Click here to join](#))

Wednesday, November 20 (Day 2)

- 9:00 a.m. Update on the UAF Bear Facility Renovation Project, LARS
Oivind Toien, PhD and Sarah Rice, PhD

Pilot Project Presentations (20 minutes for each project presentation, including Q&A)

- 9:30 a.m. Anya Goropashnaya, PhD, PPL for 2 TRiM Pilot Projects:
- *Molecular changes in a hibernator's skeletal muscles during winter as a pathway to peripheral artery disease* (Completed 6.30.2024).
 - *Pilot study to analyze myoAAV gene delivery into Arctic ground squirrels* (Completed 8.31.2024) / Mentor: Esther Dupont-Versteegden, PhD

- 10:10 a.m. Sarah Rice, PhD, Key Personnel presenting, Kriya Dunlap, PhD, PPL
Feasibility of D₂O labeling for measuring protein synthesis rates in hibernating arctic ground squirrels (Sarah Rice, PhD, Key Personnel) (5.9.2024-6.30.2025)
Mentor: Esther Dupont-Versteegden, PhD
- 10:30 a.m. Bernard Laughlin, DO, Key Personnel presenting, Maegan Weltzin, PhD
AAV Tropism in Arctic Ground Squirrels (5.9.2024-6.30.2025)
Mentor: Domenico Tupone, PhD
- 10:50 a.m. *Center for TRiM External Evaluation, FY2024*
Jen Danielson, Goldstream Group
- 11:10 a.m. *Recap of EAC meeting discussion – What have we heard?*
Tom Kilduff, PhD, EAC Chair, and Kelly Drew, PhD, Center Director – All are invited to comment.
- 11:30 a.m. Adjourn. Thank you for your thoughtful participation and work supporting the Center for TRiM!

EAC One-on-One Meetings with PPLs, Mentors, and Core Leaders (20 minutes each)

- 2:00 p.m. Anya Goropashnaya, PPL
Mentor: Esther Dupont-Versteegden
([Click here to join](#))
- 2:20 p.m. Sarah Rice, Key Personnel, and Kriya Dunlap, PPL
Mentor: Esther Dupont-Versteegden, PhD
([Click here to join](#))
- 2:40 p.m. Bernard Laughlin, Key Personnel, and Maegan Weltzin, PPL
Mentor: Domenico Tupone
([Click here to join](#))
- 3:00 p.m. Carl Murphy, HaMR Core Leader
([Click here to join](#))
- 3:20 p.m. Brandon Briggs, AIMS Core Leader
([Click here to join](#))
- 3:40 p.m. Kelly Drew and Denise Daniello, Admin Core
([Click here to join](#))
- 4:00 p.m. EAC meets to discuss TRiM Evaluation Report
([Click here to join](#))



**Center for Transformative Research in Metabolism (TRiM)
External Advisory Committee (EAC) Meeting Notes
August 3-5, 2023, In-Person Meeting, Murie Science Learning Center, Denali Park Alaska**

Thursday, August 3, 2023

Attendance: EAC members present included Chair Tom Kilduff, PhD, Director of the Center for Neuroscience at SRI International; Margaret Rice, PhD, Professor and Vice Chair for Research in the Department of Neurosurgery, Professor at the Department of Neuroscience and Physiology NYU Grossman School of Medicine; and Detlev Boison, PhD, Vice Chair of Research and Training, Dept. of Neurosurgery, Professor, Dept. of Neurosurgery, Robert Wood Johnson Medical School Professor, Dept. of Neurosurgery, New Jersey Medical School Core Member, Brain Health Institute Rutgers University. EAC member David Lathrop, PhD, Consulting Scientist and former Chief of the Heart Failure and Arrhythmias Branch in the Division of Cardiovascular Sciences at the NIH National Heart Lung Blood Institute, was excused.

Others attending included Kelly Drew, PhD, Center for TRiM Director; Oivind Toien, PhD, TRiM investigator; Anya Goropashnaya, PhD, TRiM investigator; Brandon Briggs, PhD, Assistant Professor and Leader of the Advanced Instrumentation in Microbiome Studies (AIMS) Core; Eric Henderson, AIMS Core Lab Manager; Esther Dupont-Versteegden, PhD, Mentor to PI Fedorov and RPL Goropashnaya; Sarah Zieschang, Admin Assistant, Admin Core; Jen Danielson, Goldstream Group; and Denise Daniello, Program Coordinator, Admin Core.

Call to order: The meeting was called to order at 3:30 p.m. Dr. Kelly Drew welcomed all and described the purpose of this EAC meeting which was for TRiM research investigators and core leaders to provide project updates and funding plans through formal presentations and one-on-one confidential meetings with the EAC; investigators to present a public talk about hibernation, the Park's hibernators, and TRiM's research; and for all to engage in a strategic planning session for continuing the Center with and without COBRE Phase 2 support.

EAC Meeting Overview – Prior to the start of the EAC meeting, Kelly explained that the EAC meeting with UAF Chancellor White, scheduled for Aug. 3rd, was postponed until a later date. The Chancellor was called unexpectedly for an urgent matter during our scheduled time but is willing to meet with TRiM's EAC on another date.

Kelly presented an overview of the EAC meeting agenda and meeting goals. She also gave a detailed overview of the Hibernation Science Workshop plan. This workshop is scheduled for Aug. 6-18, 2023, at the UAF campus. The workshop will include 7 days of classroom lectures, labs, and tours, including a visit to the Toolik Field Research Station in the Brooks Range for 4 days. She noted the high level of interest from 24 domestic/international participants and local and invited faculty instructors including Matt Andrews, PhD, Elena Gracheva, PhD, and Slav Bagriantsev, PhD. One aspect of the Toolik trip involved a demonstration of arctic ground squirrel (AGS) trapping. Kelly related her challenges to obtaining a teaching protocol and a trap and release protocol from IACUC that would be used as part of a workshop demonstration.

Introduction of the Strategic Brainstorming Session – Kelly and Denise introduced this group activity inviting EAC members and TRiM staff to share their ideas about the future of TRiM, based on group discussions they would

hold during scheduled hiking activities. This activity proposes to gather meaningful input for planning the continuation of the Center, with and without COBRE Phase 2 funding, emphasizing the most critical elements of TRiM to maintain in the absence of NIH funds. Seven questions were posed to the TRiM team over two days to discuss in small groups. On the last day, team members were asked to summarize their discussions on sticky notes posted under each question noted on large Post-it paper hung on the wall. On the final day, team members were asked to rate the importance of each suggestion by placing colored stickers on ideas they thought were “must have,” “nice to have, but not critical,” “can live without,” and “not needed.” Goldstream Group analyzed the findings with support from Denise. (This report is attached.)

Admin Core Update – Denise Daniello, Program Coordinator, noted the accomplishments of the Admin Core for this fiscal year by strategic aim. They include improved levels of professional productivity by TRiM investigators, increased public outreach and community engagement, development of new services for the HaMR Core that were supported under the Admin Core, successful advocacy with UAA administration to approve AIMS as a recharge center, and weekly grantsmanship mentoring support meetings.

Denise noted that the first SuRE First application was submitted by Maegan Weltzin, PhD, UAF Dept of Chemistry last spring and her application is pending. Almost two years ago, the Admin Core worked with UAF leadership and made a successful request to NIH to expand their definition of Pell Grant eligibility for undergraduate students to include full-time students, in addition to “all” undergraduate students, that would allow institutions serving non-traditional student populations to be eligible. NIH approved this request making UAF/UAA/UAS and other institutions serving non-traditional student populations eligible for these R16 grants. The R16 grant is a great fit for UAF and UAA because of UA’s focus on student engagement in research. Esther Dupont-Versteegden, PhD noted her new affiliation with the UKY SuRE First Resource Center. They are looking at ways to support investigators with their R16 grant applications.

Denise shared ideas for the Admin Core’s business development based on a fee-for-service model. Examples included supporting proposal development (editorial services, bibliographic citations, funding research), assisting cores with increasing their user base, and preparing sample shipping for investigators, among other ideas.

AIMS Core Update – Brandon Briggs, AIMS Core Leader, and Eric Henderson, Lab Manager described the services offered by the AIMS Core that focus on organismal analysis, molecular analysis, and bioinformatics, detailing the various equipment used for these services. In March 2023, they noted that UAA administration approved the AIMS Core as an official recharge center. AIMS now has a new webpage on the UAA website, a new email, and a sample submission sheet. Brandon shared ideas for developing new services to support the Core such as building a microbial library, conducting DNA extractions, and authenticating biological chemical resources. AIMS is also planning to expand its wastewater monitoring to include RSV and fentanyl, as there is new federal money for this effort which has not been used in the state.

Their goal is to create a sustainable business model. Most of the COBRE funding is used to support salary of their lab manager. From March to June, the AIMS recharge center generated \$22,000. They project \$100,000 for FY2024, pending continued service trends.

HaMR Core Update – Carl Murphy was on scheduled leave at the time of this meeting. In his absence, Kelly presented the HaMR Core update using the slide deck prepared by Carl.

Kelly chronicled the history of the HaMR Core beginning with the Molecular Imaging Facility (MIF) and the gift of the MRI from the hospital foundation. She also described the services provided and highlighted the new microscopy and animal support services. Kelly identified the staff supporting these services and their roles. The

HaMR Core had fewer users during the last three years due to the loss of faculty and research that resulted from UA's financial exigency and the COVID-19 pandemic. These trends are reversing and showing improvement with an increase in FY23 revenues as compared to FY22.

The Core is working to increase users and revenues by offering new services for cell culture and assay support, pipet and balance calibration, and pH meter maintenance. A new flyer is being developed that will be distributed to vet clinics aimed at increasing vet imaging. Core rates were also increased in FY23.

The HaMR Core provides facility merit and service awards by providing instrument time and personnel for research projects. Feasible projects that have the potential to generate future revenues (grants) and/or produce professional products, and engage students in research leading to an MS or PhD in the biomedical field are criteria used to evaluate these requests.

Recess for the day.

Friday, August 4, 2023: Reports by TRiM RPLs, discussion of group strategic discussions, and the Denali Public Talk by TRiM investigators. PI Fedorov was not present for this report as he was on scheduled leave.

PPL Oivind Toien, PhD: *Adaptations of sleep and cardiac rhythms in the hypometabolic state of a human-sized hibernator.* Oivind described his research based on 10 continuous years of polysomnographic sleep data obtained from 3 captive black bears in hibernation held at the bear facility on UAF campus and the application of these findings to improve patient outcomes in critical care. Oivind noted that he submitted an R01 application to the National Heart, Blood, and Lung Institute (NHBLI). Hibernating black bears, similar in size to humans, suppress their metabolic rate by reducing their heart rate, breaths per minute, and circadian rhythms while in the dark with only a moderate decrease in body temperature, unlike the AGS hibernator. They save energy and reduce metabolic demands by spending a longer time in a sleep state (as opposed to deep hibernation compared to the AG) without adverse effects on the heart and can respond to disturbances. Oivind's research aims to show how bears regulate their blood pressure and maintain overall cardiovascular control at a body temperature close to normal. This finding, if demonstrated, can be translated into clinical use to improve the treatment of cardiac arrest, stroke, and trauma.

Oivind presented a detailed slide deck that described the bear's life cycle, the differences in sleep patterns (NREM, REM, and quiet wake) based on sleep scoring (autoscoring versus manual scoring), and the effects of sleep patterns on brain activity and cardiovascular control. His data shows that bears sleep twice as long during hibernation as non-hibernation. These data support his hypothesis that increased sleep time is necessary to sustain the energy-saving state of hibernation.

PPL Anya Goropashnaya, PhD: *Molecular changes in a hibernator's skeletal muscles during winter as a pathway to peripheral artery disease intervention.* Anya summarized her research and findings, noting that she submitted an R01 application to the NHLBI but was not funded. Anya's research used hibernating arctic ground squirrels (AGS) as a natural model to study skeletal muscles that cycle through ischemia-reperfusion episodes during hibernation. Anya explained that this research has clinical relevance for treating patients with Peripheral Arterial Disease (PAD) because PAD patients experience similar ischemia-reperfusion conditions in their lower extremity muscles as part of this disease. Unlike the AGS who arouse from hibernation without injury, PAD patients are at high risk for morbidity and mortality. Few PAD treatment options exist which motivated her interest in this area. Anya reported that her findings showed no significant differences in muscle fiber size and ribosomal content upon arousal. AGS preserve their skeletal muscles during hibernation.

Anya described her new approach for this research using a mechanistic model comparing the AGS ischemic model to the rat ischemic model to determine differences in the amount of muscle skeletal damage between the two models. This change in approach was based on her mentor's guidance and knowledge that NIH favors mechanistic modeling. She anticipates that the rat will experience more damage to the hind limb muscle fibers after exposure to ischemia by oxygen deprivation. In comparison, the AGS ischemic skeletal muscles will be preserved. This research using the new approach is ongoing.

In addition to NIH, Anya is exploring other funding sources such as the Muscular Dystrophy Association, NSF, and the American Heart Association. She received a positive response from the MDA Program Officer who said that her project seemed a good fit for their 2024 MDA Idea program when the cycle opens next year.

EAC Confidential Meetings - PI Khrys Duddleston, PPLs Oivind Toien, and Anya Goropashnaya met individually in confidential meetings with the EAC. These conversations are therefore not reported in the meeting notes. Due to illness, Khrys Duddleston did not attend the meeting in person and provide her report. However, she participated in a phone-in meeting with the EAC.

Group Hike Activity, Prep for Strategic Planning Session – Kelly and Denise debriefed the TRiM team on the purpose of this activity. They posed the following questions for discussion during the hike:

- Do we want to continue the Center? Why and why not?
- What elements are most critical to maintain?
- How can we build our funding to be sustainable over the long term?

Recess for the Day

Denali Public Talk – This talk was advertised at the Murie Science Learning Center building and on their website for the evening of Aug. 4. The title of the talk was “Comfortably Cold: Hibernating Mechanisms of Alaskan Mammals.” A large audience of approximately 46 people attended, including tourists, residents, Park bus drivers, and guides. Sarah Rice, Oivind Toien, and Anya Goropashnaya presented using a slide deck that explained hibernation as an adaptation to low food supply, described the life cycles of the Park's hibernators, and shared information about the investigators' research and possible clinical applications. Their presentation was aimed to a layperson audience and included many photos of the Park's animals.

The talk was well-received and prompted several questions from the audience such as:

- How do you know the arctic ground squirrel is in final arousal?
- Which animal is more efficient at using fat reserves, bears or squirrels? Which animal gains more fat by percent of body fat?
- What is the mortality rate among bear cubs before they leave the den?
- Is the number of cubs determined by the mom's nutrition before hibernation?
- What about marmots?

Saturday, August 5, 2023. This session included a debriefing from Friday's public talk, a review/discussion of the EAC Administrator slide deck, a hike that included group discussions of the strategic planning questions, and a report of the group's responses to the planning questions posed.

Public Talk Debriefing – All agreed that the talk went exceptionally well, and everyone expressed surprise by the number of people attending. Below are suggestions/comments shared by the TRiM team:

- Kelly should come up at the end of the talk to pull together themes presented and describe potential translational applications from our research. In addition, Kelly could come up at the beginning of the talk to introduce TRiM.
- It is a good idea to have some sense of the general level of education from the audience to inform the presenters of what needs to be defined and what is “common knowledge” for the group. This audience had at least one nurse attending.
- TRiM’s name should be on every slide because people take pictures of the slides.
- Clarify “the thing” that we are doing to help humanity. Ideas are fine but funders want the product defined.
- There was some discussion about sharing unpublished data with the audience. One member stated that sharing data is fine because if ‘they can publish the information better, then they deserve the credit.’
- Administer a 3-question exit survey to the audience that gathers people’s feedback/comments. This information would be useful for the annual report. The survey questions should be posted on the last slide of the presentation that links to a QR code. Printed surveys should be distributed to those without an iPhone. Include contact information for TRiM (Kelly’s name and contact information along with the website URL) and the presenter information on the last slide.
- The group supported the idea for TRiM investigators to give more public talks. Other venues suggested were the Morris Thompson Cultural Center, the Chamber of Commerce, and the AK State Fair booth.
- Talks should honor the presentation time allotted. For one-hour-long talks, 45 minutes should be devoted to the presentation with 15 minutes for audience questions/comments. At the end of the hour, the presenter should let people know that the presentation is over but invite those who want to ask more questions to remain and talk with the presenters.
- Use a microphone.
- Present the big picture to the audience of what you want to communicate, both at the beginning and at the end of the presentation as the take-home message.
- More animal-related questions from the audience were expected, given the location.

Review of EAC-UAF Administration Slide Deck – Kelly briefly reviewed the slide deck prepared for the EAC to make to the UAF administration. She focused attention mostly on TRiM’s request to UAF leadership for support. There are 8 TRiM asks noted on this slide. Below are suggestions/comments made by the TRiM team to improve this slide:

Consolidate the 8 “asks” into 3 primary headings and align them with UAF’s Strategic Plan 2027 (#1, Modernize the Student Experience; #3 Achieve Tier 1 Research Status; and #5 Revitalize key academic programs). Make the same “ask” to the Strategic Advisory Committee. Recommendations for possible headings:

1) *Administrative Leadership*

- a. Request a new home for the HaMR Core - To alleviate competition for the Chancellor’s funds with other units.
- b. Modernize IACUC – Participants noted multiple issues that delay the approval process and UAF’s ability to apply for/receive grant funds. Comments shared were: (1) Facilitate more productive communication and collaboration between ARC, investigators, and the IACUC by assigning active researchers to the IACUC (including mammalian researchers); (2) Form an ARC management committee to include active researchers (who can help to flesh out protocols before they are presented to IACUC). (3) Offer pay for IACUC members to increase interest in service (e.g., 1-month salary for the IACUC Chair); and (4) Apply for AAALAC accreditation (Association for Assessment and Accreditation of Laboratory Animal Care) to be aligned with NIH policy.
- c. Provide access to educate state legislators and federal representatives about the health needs of Alaskans and the Center for TRiM.

2) *Institutional Support*

- a. TRiM's request for FY25 state capital funds (\$185,898).
- b. Chancellor's continued annual support for the HaMR Core.
- c. UA institutional support for the COBRE Phase 2 application that includes support for the PI (salary and research), research faculty (6 months), and the HaMR Core.

3) *Research Infrastructure*

- a. Approve the DXA (Dual-energy X-ray Absorptiometry) available for public use to grow our contacts and interest to enhance research opportunities.
- b. Confirm space for microscopy, histology, and cell culture that this space belongs to TRiM.

End this slide by stating 'We cannot make progress without these asks moving towards Tier 1 Research Status (#5). We ask for your support of our cores and recommendations to improve the IACUC to support student success (#1).

Strategic Session Reporting and Evaluation – EAC and TRiM staff were encouraged to note their groups' ideas on sticky notes and post them under each question. At the end of this exercise, everyone was asked to rank the importance of each response. Results were tallied. The Goldstream Group analyzed the responses. This report, a separate document, will be presented and discussed at the September ISC meeting.

Adjourn – The meeting was adjourned at 3:00 p.m. This was the last in-person EAC meeting for the COBRE Phase 1 grant.