Obtaining beamtime at BioCAT

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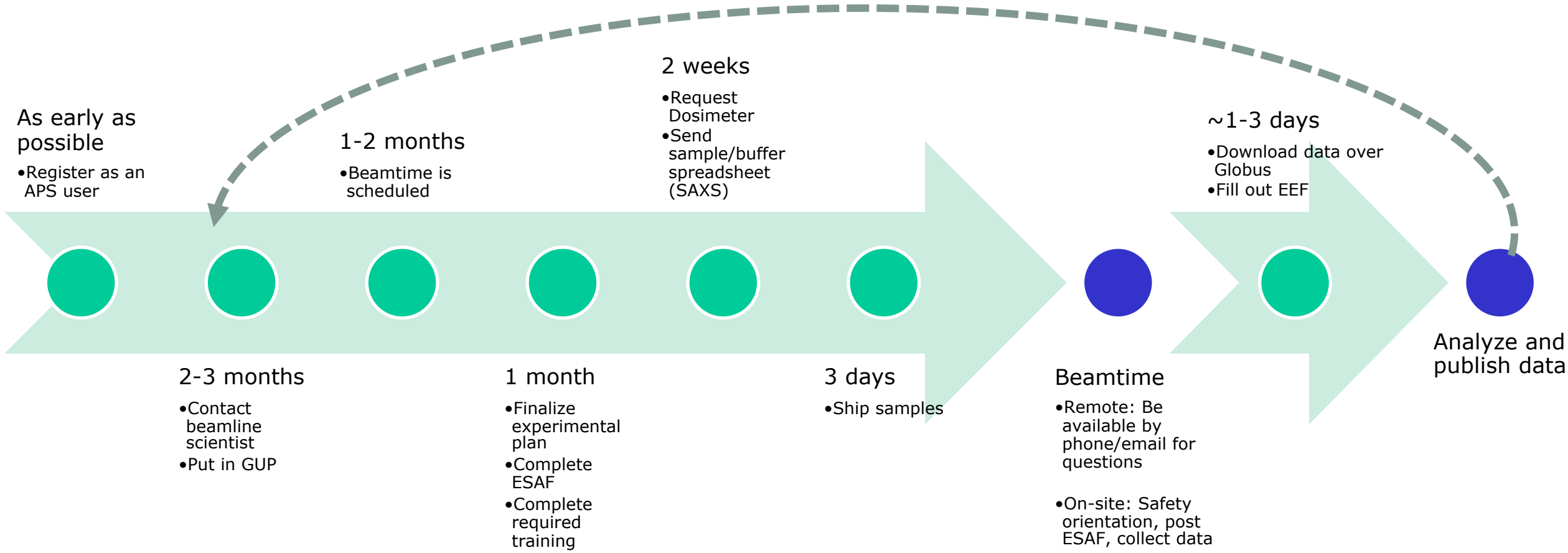
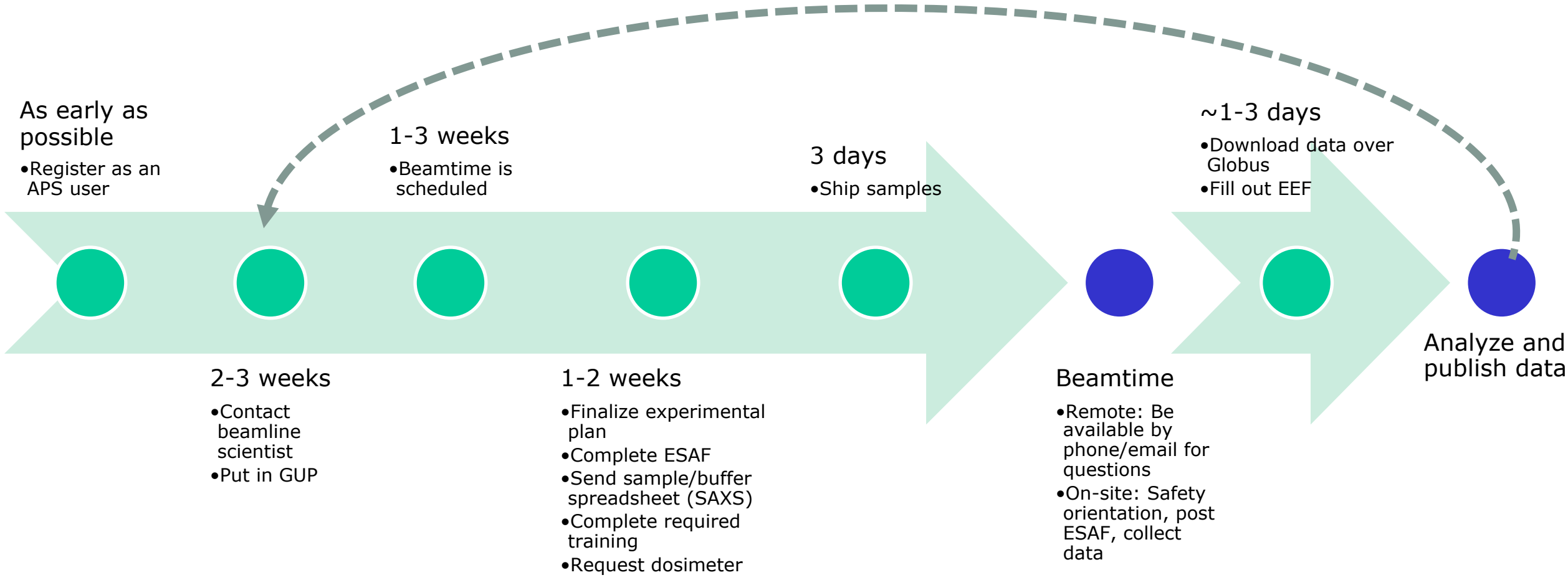
Information to get started

- BioCAT is an NIH funded national user facility, there is no cost for non-proprietary work
- Website: https://www.bio.aps.anl.gov/
- Scientific contacts:
  - SAXS
    - Max Watkins - mwatkins2@iit.edu
  - Fiber/Muscle:
    - Weikang Ma - wma6@iit.edu
- Guide to applying for beamtime:
  - https://www.bio.aps.anl.gov/pages/applying-for-time.html
- Guide for experiment planning:
  - https://www.bio.aps.anl.gov/pages/how-to-design-saxs-exp.html
  - https://www.bio.aps.anl.gov/pages/how-to-prepare-saxs.html

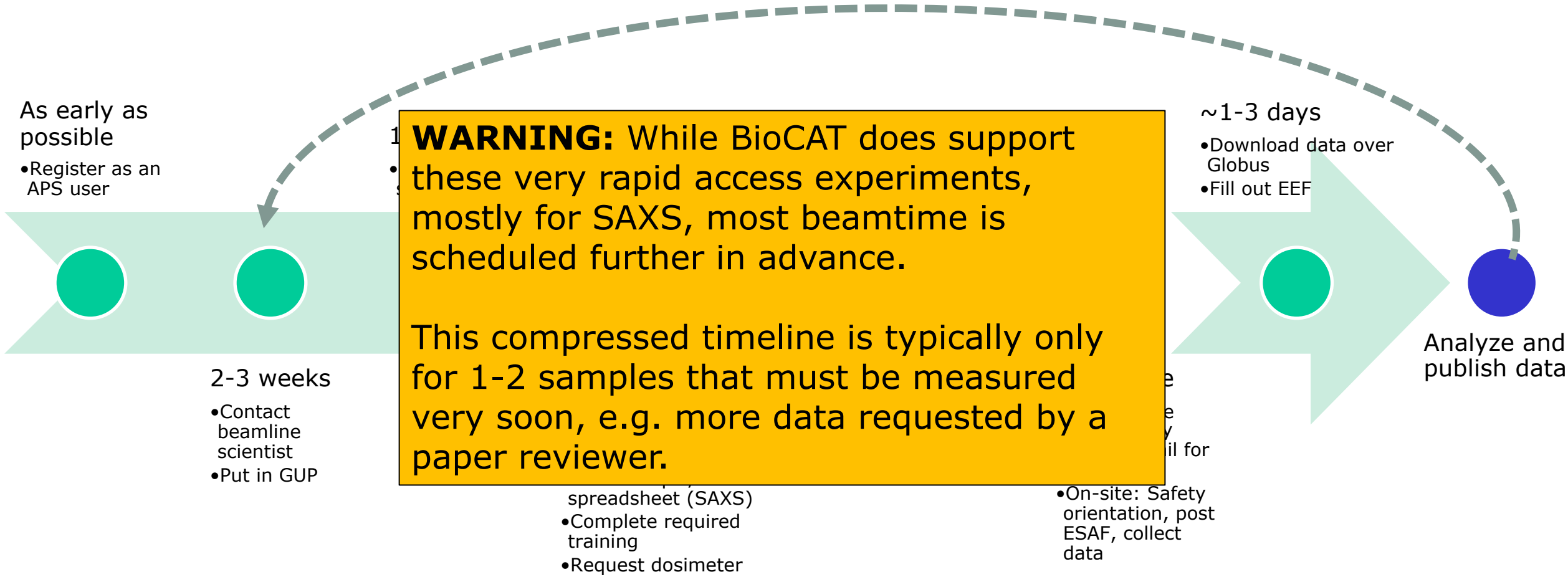
Timeline - preferred



Timeline - compressed



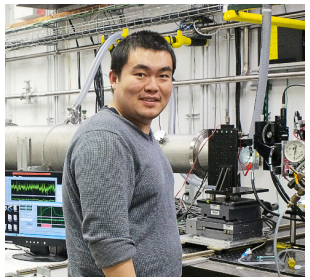
Timeline - compressed



Working with beamline scientists

- BioCAT's expert scientists are happy to work with you on experiment design, analysis, and even publication
- Scientists are happy to provide support for your experiments as needed
  - Quick advice on your experiment and data analysis
  - Full collaboration as a co-author
- Good communication with your beamline scientist will lead to more successful experiments

Fiber/Muscle:



Weikang Ma
Beamline scientist

Tom Irving
PI

SAXS:

Max Watkins
Beamline scientist

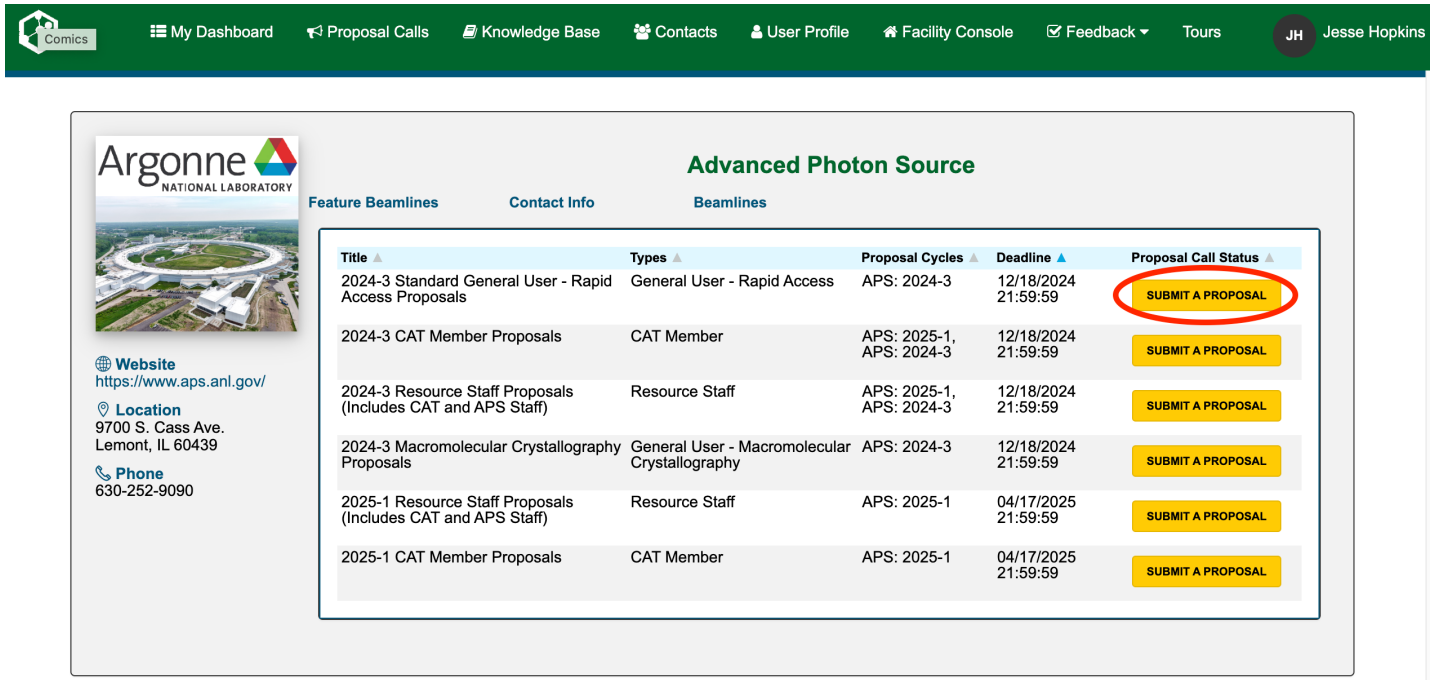
Jesse Hopkins
Director

Access modes

- On-site (all)
  - Users come on-site
  - Work initially collaboratively then independently to collect data
- Remote collaboration (SAXS, proof-of-principle Fiber):
  - Users mail samples to beamline
  - Beamline scientist is closely involved in experiment planning, do the on-site prep and measurement, provide first analysis of data
  - Beamline scientists are co-authors on publications
- Hybrid (all):
  - Some users come on-site, some join remotely
  - Otherwise the same as on-site
- Mail-in (SAXS):
  - Users mail samples to beamline
  - Beamline scientist does minimal prep, makes automated measurements, provides automated first look at data analysis
- Remote (SAXS):
  - Users mail samples to beamline
  - Beamline scientist does minimal prep, trains user in beamline operation
  - User controls measurements remotely

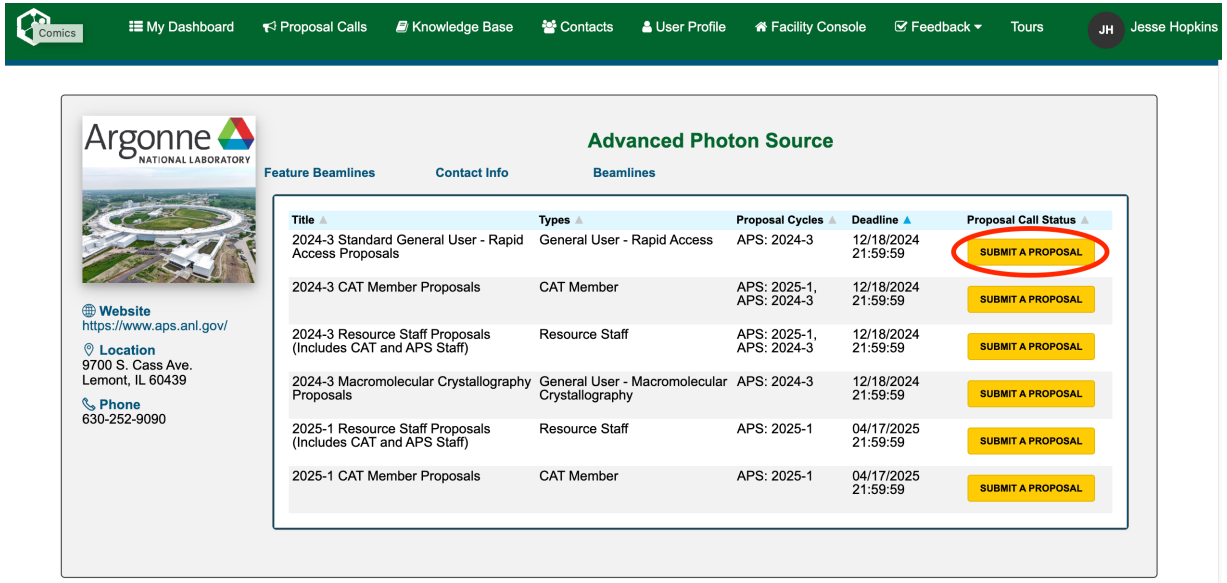
Applying for beamtime

- Register as user (required to submit proposal)
  - https://beam.aps.anl.gov/pls/apsweb/ufr_main_pkg.usr_start_page
  - This can take significant time for non-US citizens
- Submit proposal
  - New Universal proposal system (UPS)
  - https://www.aps.anl.gov/Users-Information/About-Proposals/Apply-for-Time



Applying for beamtime

- Standard General User Proposals
  - Good for 2 years, multiple beamtimes
  - Deadlines 3 times per year
  - Scored and allocated by APS ~1 month after deadline
  - If you already have a standard GUP, submit an experiment time request (ETR) instead
  - Given highest priority for obtaining beamtime and scheduling
- Rapid Access General User Proposals
  - Good for 1 beamtime
  - Rolling submission
  - Given lower priority than standard GUPs
- We encourage users to submit standard GUPs, but accept rapid access GUPs as well



Scheduling

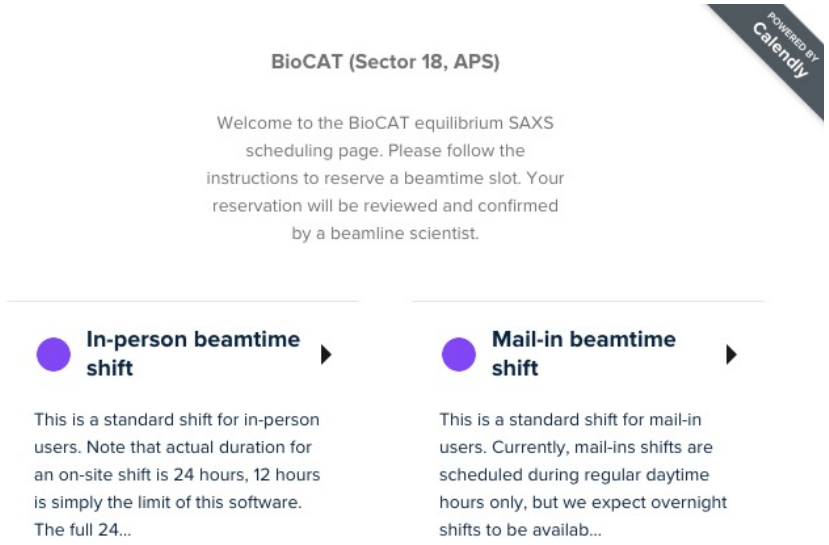
- Scheduling for fiber/muscle and TR-SAXS is done in consult with your beamline scientist

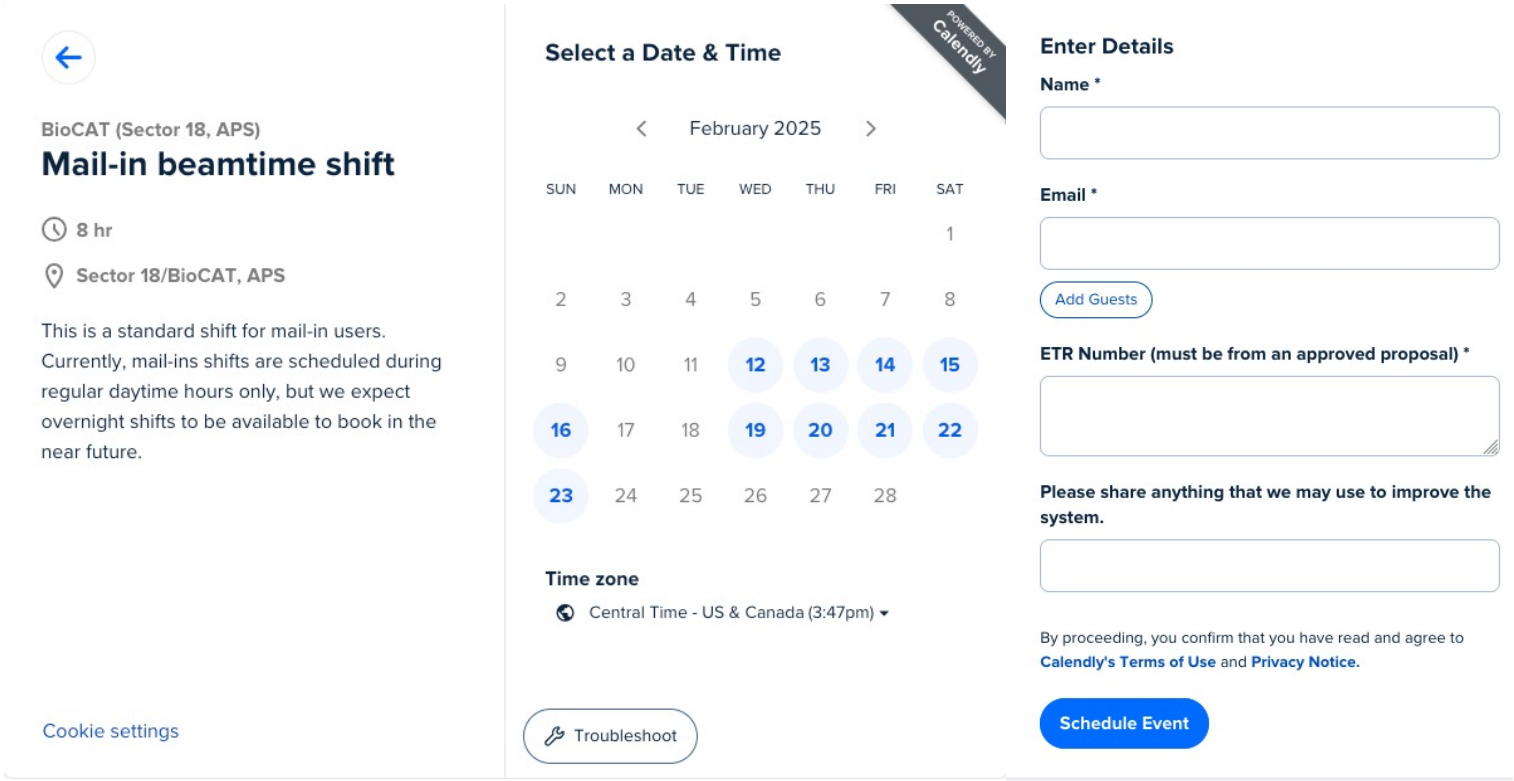
- Equilibrium SAXS scheduling is done through a new self-scheduling system
  - Must have an ETR prior to using this system or your requested time will be denied

Scheduling – SAXS self-booking

- We have a new self-scheduling system for SAXS users, starting this run
  - Beamline staff will still be in regular communication about experiments
- Available next week!
- Built-in email reminders for deadlines

Note that scheduling requires you have an approved proposal and ETR number





Filling out your ESAF

- The APS requires an experimental safety assessment form (ESAF) for each experiment
  - https://beam.aps.anl.gov/pls/apsweb/esaf0001.start_page
  - https://www.bio.aps.anl.gov/pages/esafs.html
  - Without the ESAF we cannot run your samples

- ESAFs must be submitted . . .
  - On-site: 2 weeks in advance
  - Mail-in: 1 week in advance

- If you miss this deadline the APS will not approve the ESAF and we cannot carry out the experiment

- If an experimenter is not listed on the ESAF, or the ESAF is not approved you will not be able to get on site when you arrive

New Requirement for Dosimeters for On-site Experiments

- Dosimeters are now required to get access to the experimental floor
  - This is new with APS-U, expected to last 3-5 years
- Dosimeters must be requested at least 3 business days in advance of your experiment
  - https://www.aps.anl.gov/Users-Information/APS-Dosimetry-Information
- Dosimeters can be picked up outside the APS user office in building 400

Shipping samples

- Shipping address available on BioCAT website:
  - https://www.bio.aps.anl.gov/pages/shipping.html

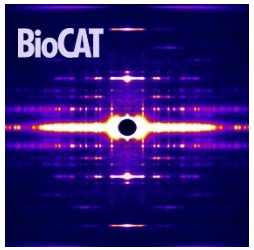
- Ship via FedEx Priority Overnight if you want samples to arrive the morning after (FedEx is the preferred shipper at Argonne)
  - Other methods may not arrive until the afternoon or even the next day
  - Send tracking info to your scientific contact

- We cannot receive samples on weekends or holidays

- BioCAT provides short term room temperature, 4° C, -20° C, and -80° C storage for user samples and buffers

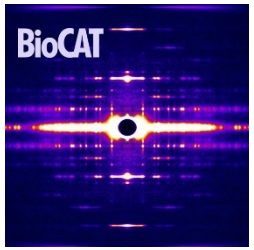
After your beamtime

- Transfer data
  - Data can be transferred to a user-provided external hard drive (on-site) or via Globus
- Beamline scientists are happy to collaborate with you on experiment planning, analysis, etc. Just ask!
- Acknowledge BioCAT in any publications
  - This research used resources of the Advanced Photon Source, a U.S. Department of Energy (DOE) Office of Science User Facility operated for the DOE Office of Science by Argonne National Laboratory under Contract No. DE-AC02-06CH11357. BioCAT was supported by grant P30 GM138395 from the National Institute of General Medical Sciences of the National Institutes of Health.
  - https://www.bio.aps.anl.gov/pages/user-publications.html



Stumbling Blocks

- User registration – register/renew as far in advance as possible
  - Can take significant time (weeks) for non-US citizens
- ESAF deadline – 14 days for on-site, 7 days for remote/mail-in
  - Can’t do the experiment without an approved ESAF
- Dosimeter – 3 business days before on-site experiment
  - Can’t get on the experimental floor without it
- Shipping
  - Can’t receive samples on weekends/holidays



Summary

1) All users register/renew
   - As early as possible
2) Submit a GUP or ETR
   - Standard GUPs – 3-5 months before
   - ETR against existing standard GUP - >2 weeks, ideally at least 1 month before
   - Rapid access GUP - >2 weeks, ideally at least 1 month before
3) Schedule beamtime
   - >2 weeks, ideally at least 1 month before
4) Submit ESAF
   - At least 14 days (on-site) or 7 days (mail-in/remote) before beamtime
5) Request dosimeter (on-site)
   - At least 3 days before
6) Ship samples
   - ~3 days before

BioCAT is Back!