



“Follow that Cell” NIH Challenge Phase 2 Solvers Webinar

April 10, 2015 - 1:00pm ET

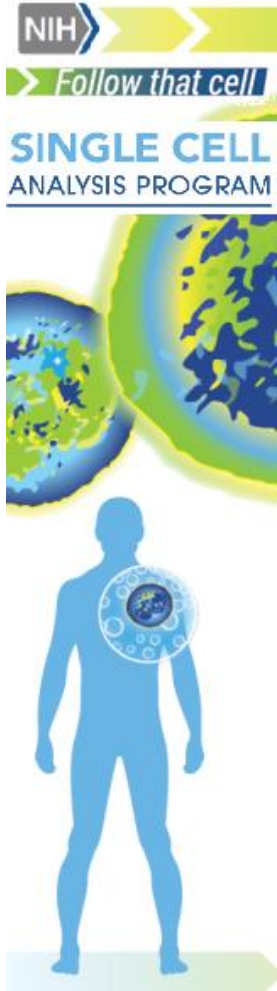
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Background of “Follow that Cell” Challenge



Phase 1 (Theoretical) *

- Began on August 15, 2014.
- Phase 1 of the Challenge is to propose a solution
- Phase 1 Winners and other Finalists Announced on March 16, 2015.
- Amount of prize: \$100,000 (may be split among up to 6 winners)

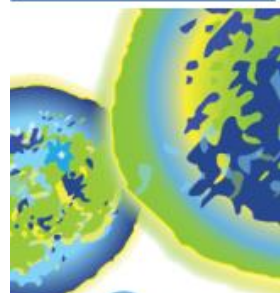
Phase 2 (Reduction to Practice)

- March 17, 2015 - July 31, 2017. All Phase 1 prize winners and other finalists are eligible to participate as Phase 2
- Phase 2 Solvers will execute their proposed Phase 1 solution and submit single cell data measuring changes in an individual cell over time.
- Amount of Phase 2 Prize: \$400,000 (may be a single winner or split between 2)



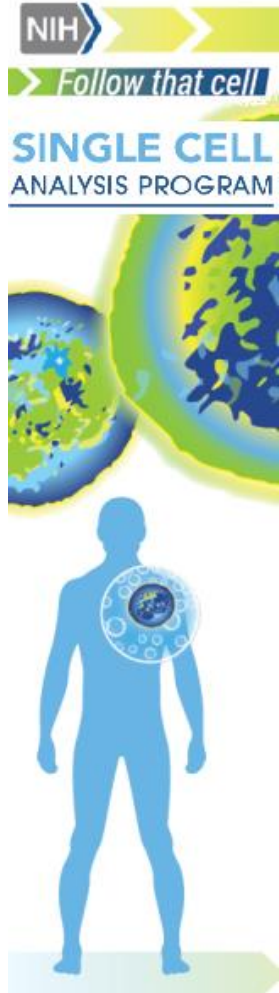
***Acknowledgements:** Ronald N. Germain (NIAID), Leroy Hood (Institute for Systems Biology), Tom Misteli (NCI), Pamela G. Robey (NIDCR), Hari Shroff (NIBIB)

Phase 1 Finalists = Phase 2 Solvers



Name	Solver	Solution Title
1st Place Winner	Paul Blainey, Ph.D. (team leader)	"Single-Cell Timelapse Gene Expression Profiling via an Engineered Self-Reporting Pathway"
Prize Winner	James Ankrum, Ph.D.	"Self-Destructing Cellular Barcode: A Versatile Tool for Single Cell Analysis"
Prize Winner	Brian Chen, Ph.D.	"Measuring Protein Concentrations and Protein Translation over Time in Single Cells In Vivo"
Prize Winner	James Eberwine, Ph.D. (team lead)	"BLINKER Assessed Live Cell Transcriptomics"
Prize Winner	Nader Pourmand, Ph.D.	"Study the Longitudinal Expression of the Genome of a Single Cell"
Finalist	Helen Blau, Ph.D. (team lead)	"Next Generation Automated Cell Tracking Software to Follow that Cell and Its Progeny Accurately in Complex Multicellular Environments"
Finalist	Joseph Conrad, Ph.D. (team lead)	"Development, Optimization, and Enhancement of Fluorescent DNA-Hairpin Functionalized Gold Nanoparticles as Imaging Tools"
Finalist	Tania Konry, Ph.D.	"Microfluidic Droplet Based Platform for Cell Co-Encapsulation and Monitoring"
Finalist	Markita Landry, Ph.D.	"Synthetic Nano-Antibodies for Real-Time Monitoring of Cellular Biomarkers"
Finalist	Xin Lu, Ph.D.	"Single Cell Oncogenesis"
Finalist	Garry Nolan, Ph.D. (team lead)	"Tracking the Phenotype of Single Cells using Multicolor Flow Cytometry Combined with Cell-Specific Barcodes"
Finalist	Frederick Sachs, Ph.D. (team lead)	"Flow of Mechanical Information in Living Cells"
Finalist	Hongjun Song, Ph.D. (team lead)	"RNA-seq"
Finalist	Pak Kin Wong, Ph.D. (team lead)	"Dynamic Tracking of Cancer Stem Cells in Native Tumor Microenvironments- Single Cell, Dynamic Monitoring of Multi-Gene Expression in Tumor Tissues"
Finalist	X. Nancy Xu, Ph.D.	"Photostable Multiplexing NanoAssays for Real-Time Molecular Imaging of Single Live Cells"
Finalist	Zhibo Yang, Ph.D.	"Development of Micro-Scale Sampling Probes for In Situ Mass Spectrometry Analysis of Secretomes from Live Single Cells"

Meeting Agenda



1. InnoCentive Challenge Posting
2. Challenge Specific Agreement
3. Eligibility requirements
4. Sources of Funding Support for Phase 2
5. Intellectual Property Discussion
6. Evaluation Criteria and Process
7. Single Cell PI Meeting

InnoCentive Challenge Posting

Further details for this **private, Phase 2 Challenge** hosted by InnoCentive are available online: <https://www.innocentive.com/ar/challenge/9933734>

NIH Single Cell Analysis Challenge: Follow That Cell (Phase 2)

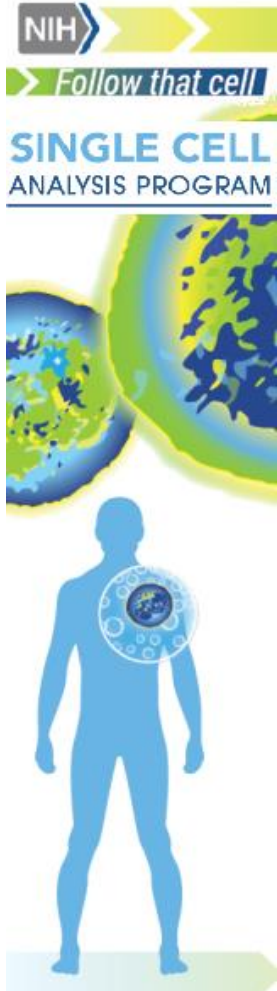
TAGS: Physical Sciences, Math/Statistics, Requests for Partners and Suppliers, Life Sciences, Chemistry, Engineering/Design, RTP

AWARD: **See details** | DEADLINE: 3/30/17 | ACTIVE SOLVERS: 0 | POSTED: 3/17/15

Finalists from Phase 1 are invited to participate as Phase 2 Solvers in the Reduction to Practice challenge to provide proof of concept data related to their Phase 1 entries. Phase 2 Solvers are encouraged to incorporate the expert review feedback from Phase 1 and form team/partnerships to improve the likelihood of successful solution implementation. The NIH intends to award up to 2 winning solutions from a total pool of \$400,000.

This Reduction-to-Practice Challenge requires documentation of Phase 1 implementation including the submission of data.

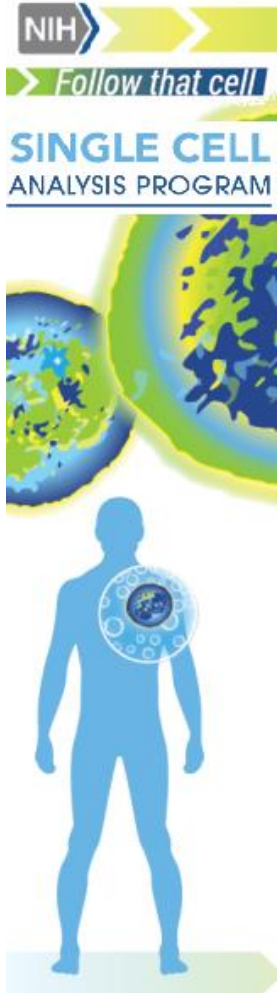
Source: InnoCentive Challenge ID: 9933734



InnoCentive Challenge Posting

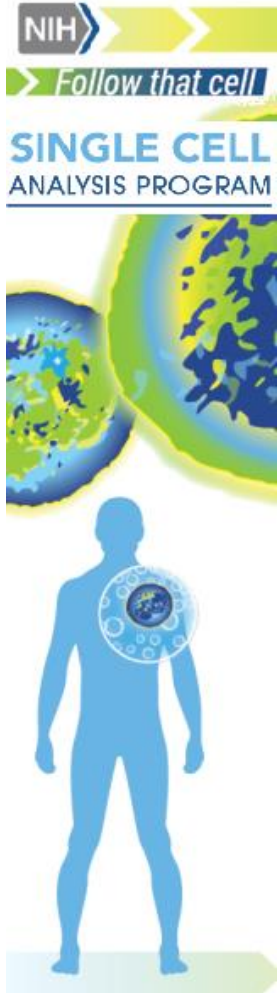
Further details for this private, Phase 2 Challenge hosted by InnoCentive are available online: <https://www.innocentive.com/ar/challenge/9933734>

- The Evaluation Process will be similar to Phase 1
- As part of the evaluation process the Technical Evaluation Panel may request a demonstration of the technology.
- Submissions to the Phase 2 Challenge must be received by 11:59 PM (US Eastern Time) on March 30, 2017.
- Solvers are encouraged to submit a one-page status update at 6-month intervals.



Challenge Specific Agreement

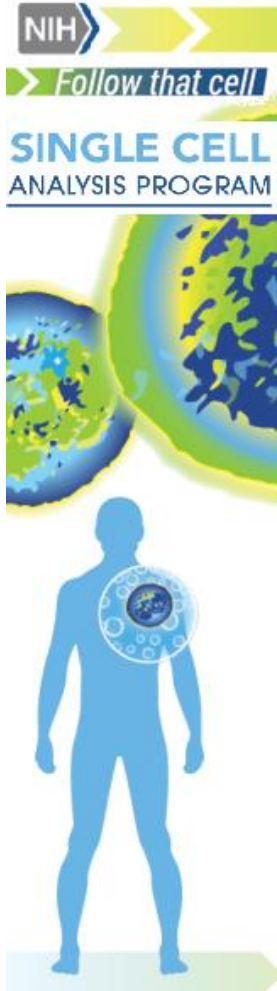
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- The Challenge Specific Agreement outlines current expectations but is currently being reviewed by the Seeker and a revised CSA may need to be signed prior to submitting your final solution.
- Refer to “2014 InnoCentive RTP Challenge CSA” (posted in project room on the InnoCentive website.)

Eligibility requirements

- Please read carefully the details on the specific **eligibility criteria** listed in the Federal Register Notice (<https://federalregister.gov/a/2014-18870>).



2. To Win

To be eligible to win a prize under this Challenge, the Solver—

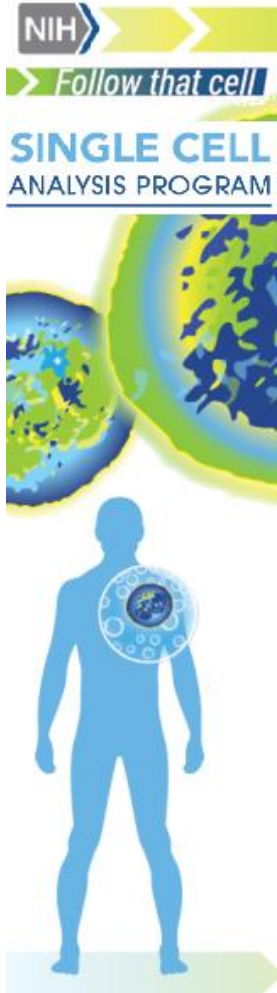
1. Shall have registered to participate in the Challenge under the process identified at the InnoCentive Web site www.innocentive.com/followthatcell.

2. Shall have complied with all the requirements under this section on Eligibility.

3. In the case of a private entity, shall be incorporated in and maintain a primary place of business in the United States; and in the case of an individual, whether participating singly or in a group, shall be a citizen or permanent resident of the United States. **Note:** Non-U.S. citizens and nonpermanent residents can participate as a member of a team that otherwise satisfies the eligibility criteria but will not be eligible to win a monetary prize (in whole or in part); however, their participation as part of a winning team, if applicable, may be recognized when results are announced.

Eligibility requirements

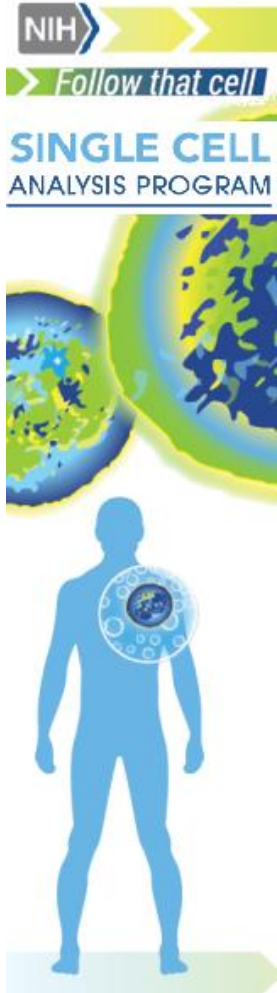
- Please read carefully the details on the specific **eligibility criteria** listed in the Federal Register Notice (<https://federalregister.gov/a/2014-18870>).



4. In the case of an individual, he/she may not be an employee of the NIH; an individual involved in formulation of the Challenge and/or serving on the technical evaluation panel; any other individual involved with the design, production, execution, distribution, or evaluation of this Challenge; or members of the individual's immediate family (specifically, a parent, step-parent, spouse, domestic partner, child, sibling, or step-sibling).

Eligibility requirements

- Please read carefully the details on the specific **eligibility criteria** listed in the Federal Register Notice (<https://federalregister.gov/a/2014-18870>).

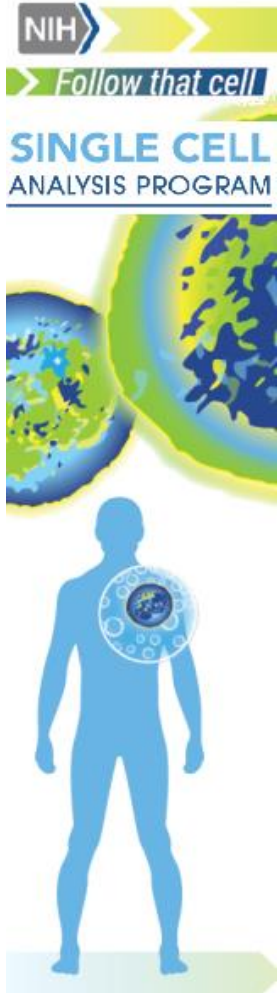


8. Federal grantees may not use federal funds to develop Challenge submissions.

9. Federal contractors may not use federal funds from a contract to develop Challenge submissions or to fund efforts in support of a Challenge submission.

- **Note:** No federal funds can be used to develop a Challenge submission.

Sources of Funding Support for Phase 2

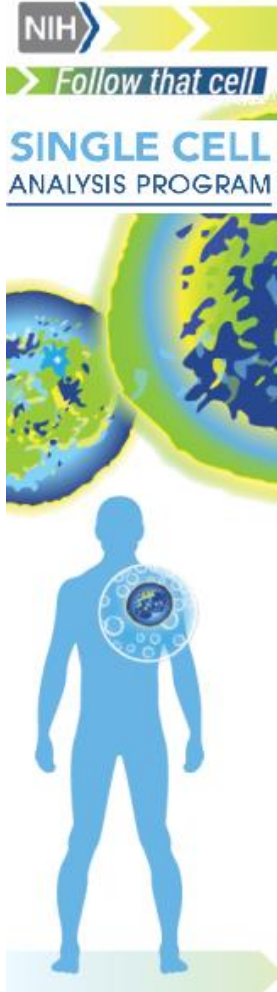


Note: No federal funds can be used to develop a Challenge submission.

Options for funding:

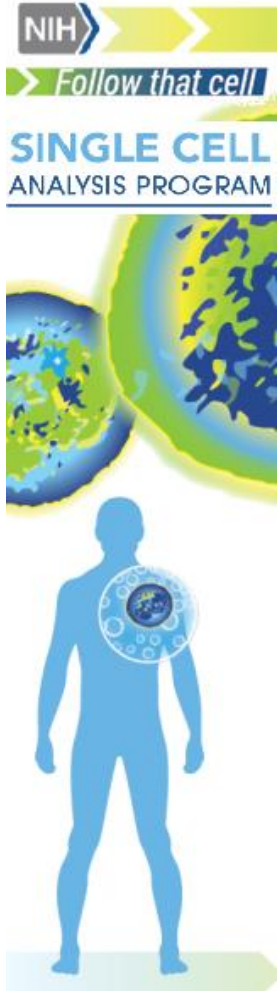
- University funds (non-federal)
- Non-profit/foundation grants
- Private investor support
- Venture capital
- State or local government funding (non federal sources)
- Family/friends
- Others?

Intellectual Property Discussion



- To receive an award, Solvers will not be required to transfer their exclusive IP rights to the Seeker. Instead, Solvers will grant to the Seeker a *non-exclusive license* to practice their solutions.
- The Challenge Specific Agreement outlines current expectations but is currently being reviewed by the Seeker and a revised CSA may need to be signed prior to submitting your final solution.
- Please make sure your Institutional officials are aware of your participation in Phase 2 and your participation is consistent with your employment agreement if applicable.

Phase 2 Evaluation Criteria and Process

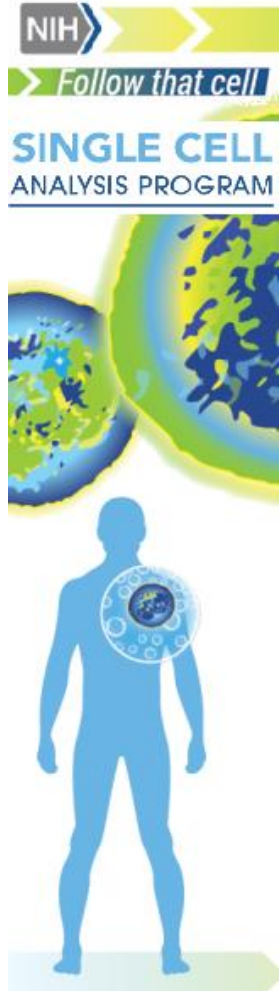


- <https://www.federalregister.gov/articles/2014/08/11/2014-18870/announcement-of-requirements-and-registration-for-follow-that-cell-challenge#p-56>

Phase 2 (Reduction to Practice)—Phase 2 submissions must provide a clear description of how experiments were conducted (including use of appropriate controls, instrument calibration, etc.) and how the data were collected. Phase 2 submissions must include all requisite scientific and technical details including materials, methods, protocols, and devices to demonstrate successful execution of the proposed solution. It should also document trouble-shooting: What technical or analytical challenges were encountered and how were these resolved? Has reproducibility of the approach been demonstrated? What improvements and/or innovations were implemented above and beyond what was proposed in Phase 1?

The technical evaluation panel will use the following criteria and rating scales for evaluating proposed Phase 2 solutions, with high scores reflecting the mostly highly rated solutions. (Maximum 100 points, plus bonus points)

Phase 2 Evaluation Criteria and Process



1. Time Course Measurements—Must provide time course measurement data on the same cell over a biologically significant period of time with adequate time intervals. (0-25 points)

2. Predictability—Approach must provide technical specifications (sensitivity, selectivity, spatiotemporal resolution, signal-to-noise ratio, etc.) that will adequately support robust prediction of phenotypic changes in cell state that occur naturally or in response to controlled perturbation(s). The data should also support robustness, stability, and reproducibility of measurements. (0-20 points)

3. Cellular Environment—Must provide measurement data pertaining to single cells in a complex multicellular environment with preference for cell types that are phylogenetically closer to human; (a-d below ordered from greatest to least in interest). (0-20 points)

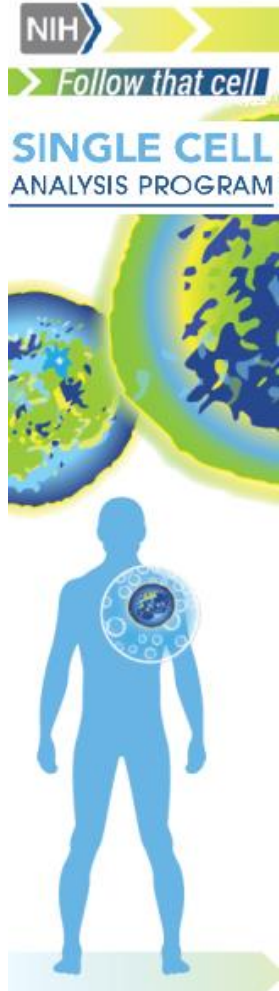
a. Multicellular living organism (15-20 points)

b. Intact tissue (10-15 points)

c. Organoid culture (5-10 points)

d. Cell culture (0-5 points)

Phase 2 Evaluation Criteria and Process



4. Significance—Must address a meaningful biological or clinical question with high potential impact if successful; must make technical advances and/or improvements to existing methods and approaches. Should provide evidence of reproducibility. (0-20 points)

5. Adaptability—Must describe broad utility and scalability. The approach should lend itself to more than one particular cell type. (0-15 points)

Bonus Points (maximum 20 bonus points)

- Throughput Methods that promote multiplexed analysis to increase throughput and coverage will be rated more favorably. (Bonus up to 10 points)
- Data Content Methods that collect and integrate multiple types of data (e.g., biochemical, physiologic, morphological, or `omics-level analyses) on individual cells will be rated more favorably. (Bonus up to 10 points)

As part of the evaluation process, the panel may request a demonstration of the technology.

THE FINE PRINT.....

The NIH reserves the right to cancel, suspend, and/or modify this Challenge at any time through amendment to this Federal Register notice. In addition, the NIH reserves the right to not award any prizes if no solutions are deemed worthy. The award approving official for Phase 1 and Phase 2 of this Challenge is the NIH Principal Deputy Director. □

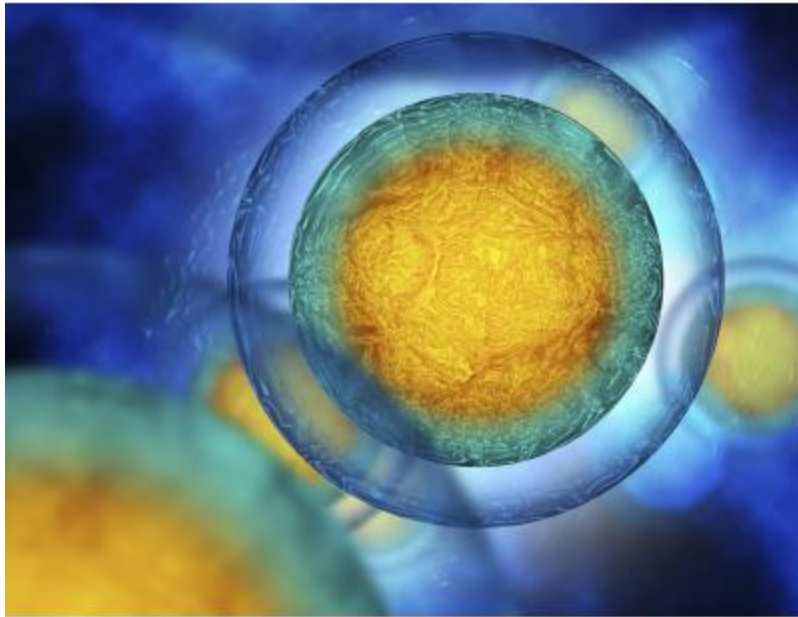
Good Luck!

Questions?

NIH Single Cell Analysis Meeting: April 20-21, 2015



NIH National Institutes of Health
Office of Strategic Coordination - The Common Fund



Single Cell Analysis

3rd Annual Investigators Meeting



April 20-21, 2015

Natcher Conference Center, NIH, Bethesda, MD

- **Meeting times:** Monday, April 20 at 8am – Tuesday, April 21 at 1pm
- Visit registration website for details nihsinglecellmeeting2015.eventbrite.com, e.g. NIH campus security check-in, agenda, meeting materials...
- Travel arrangements through NIMH, please refer to your emails
- **Need Phase 1 team member names COB today**
- Contact Cathy Ng with any questions: single_cell@mail.nih.gov
- See many of you there!