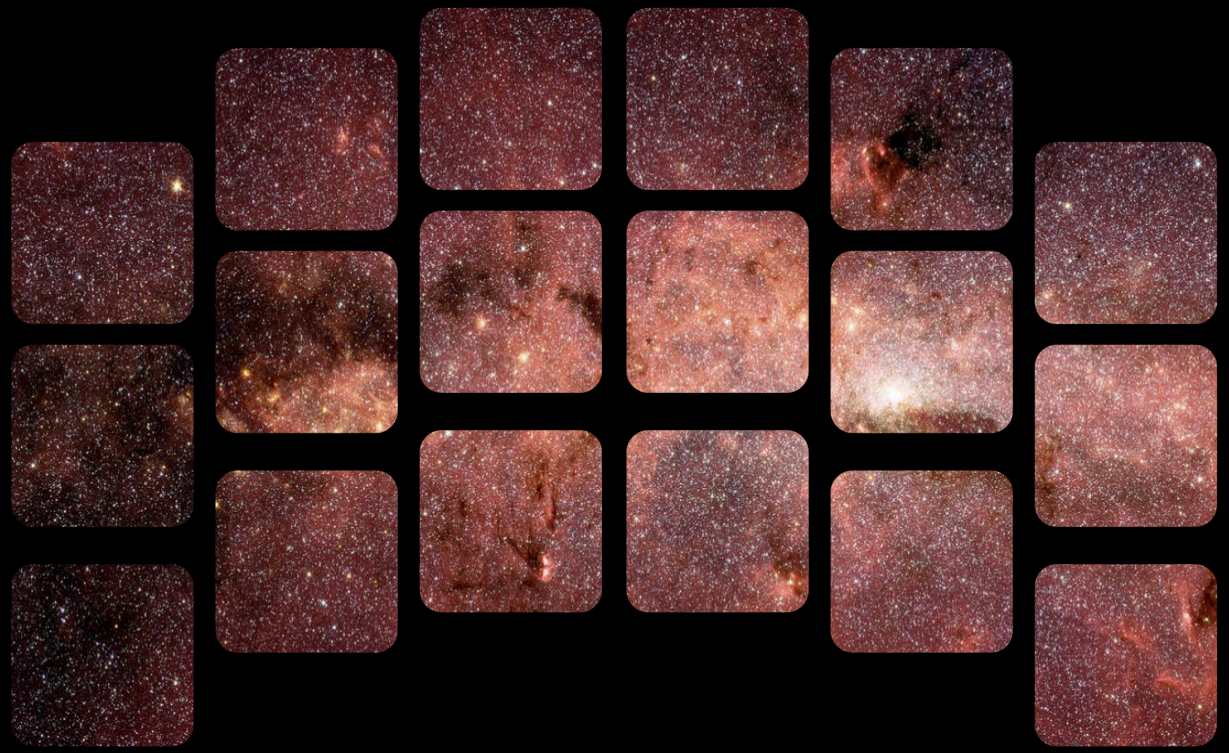
Science Teams and Advisory Committees



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Summary

Science Definition Teams provided scientific input to pre-Formulation mission concept development

- **Science Definition Team #1**
  - Chartered by HQ to work with Project to provide advice on implementation of WFIRST as-recommended by Astro-2010
  - No funded science team support
  - February 2011 – August 2012
  - Final Report: arXiv:1208.4012
- **Science Definition Team #2**
  - Chartered by HQ to work with Project to determine whether or not to base WFIRST on the 2.4m telescope assets
  - No funded science team support
  - November 2012 – February 2015
  - Final Report: arXiv:1503.03757

- **Formulation Science Working Group & Science Investigation Teams**
  - Chartered by HQ to support Project during Formulation and through the Mission Critical Design Review
  - 11 Science investigation teams funded, spanning wide range of science (see subsequent slides)
  - FSWG consisted of PIs of the SITs, members of Project, Science Centers, and HQ
  - February 2016 – October 2021
  - Reports & papers: many; see science team community briefings:
    - https://roman.gsfc.nasa.gov/science/workshop112021/agenda.html https://roman.ipac.caltech.edu/mtgs/Roman_CGI_workshop.html

- **Roman Science Interest Group**
  - Chartered by Project Scientist to provide broad-based scientific input

Science Investigation Teams (2016 - 2021)

- **Supernova Cosmology: Ryan Foley, Saul Perlmutter**
- **Weak Lensing and Galaxy Redshift Survey: Olivier Dore**
- **Exoplanet Microlensing: Scott Gaudi, David Bennett**
- **Exoplanet Coronagraphy: Bruce Macintosh, Margaret Turnbull**
- **Nearby Galaxies: Ben Williams**
- **Extragalactic: Brant Robertson**
- **Archival Research: Alexander Szalay**
- **Cosmic Dawn: James Rhoads**
- **Milkyway: Jason Tumlinson**

Adjutant Scientists
David Spergel - WFI
Jeremy Kasdin - CGI

- **~300 scientists in total**
  - scientific performance requirements related to the specific science area,
  - design of overall observational strategy concept,
  - science data analysis techniques,
  - ground and space calibration requirements,
  - science simulations, precursor observations,
  - ground calibration, observational needs, data processing, ancillary data collection/incorporation, analysis, dissemination and documentation of the proposed science investigation.

(Code of conduct established/discussed in 2019)

- **science team contracts expired late 2021**

Formulation Science Working Group (2016– 2021)

- **Formulation Science Working Group (FSWG)**
  - Coordinated overall work of teams & interactions with Project
  - Chaired by Project Scientist & the CGI and WFI Adjutant Scientists

Julie McEnery (chair)	Senior Project Scientist
Jeremy Kasdin (co-chair)	Adjutant (CGI)
David Spergel (co-chair)	Adjutant (WFI)

Science Team PIs	
Olivier Dore	Weak Lensing, GRS
Ryan Foley	Supernovae
Scott Gaudi	Microlensing
Jason Kalirai	Milky Way (GO/GI)
Bruce Macintosh	Exoplanets
Saul Perlmutter	Supernovae
James Rhoads	Cosmic Dawn (GO/GI)
Brant Robertson	ExtraGalactic (GO/GI)
Alex Szalay	Archival Science (GO/GI)
Maggie Turnbull	Exoplanets
Ben Williams	Nearby Galaxies (GO/GI)

Ex-Officio	
Dominic Benford	Program Scientist
Lee Armus	Science Center
Ken Carpenter	Deputy Proj. Sci.
Jeff Kruk	Deputy Sen. Proj. Sci.
Jason Rhodes	Deputy Proj. Sci.
Roeland van der Marel	Science Center

Science Team Deputy PIs	
Dave Bennett	Microlensing
Chris Hirata	Weak Lensing, GRS
Nikole Lewis	Exoplanets
Aki Roberge	Exoplanets
Yun Wang	Weak Lensing, GRS
David Weinberg	Weak Lensing, GRS

Roman Science Interest Group (2020 - ..)

- https://roman.gsfc.nasa.gov/science/rsig.html
- **Meeting presentations and notes available on the meetings tab**
  - Discussions on observing program, proposal opportunities, mission/instrument status etc
- **Regular opportunities to join this group**
- **Reports to Project and Program Scientists**

Megan Donohue (Chair)	**Michigan State U.**
Zeljko Ivesic	U. Washington
Jessica Lu	UC Berkeley
John MacKenty	STScI
Ashley Villar	Columbia U / Flatiron Institute
Alice Shapley	UCLA
Keith Bechtol	UW, Madison
Saurabh Jha	Rutgers U
Peter Melchior	Princeton U
Dara Norman	NOIRlab
Jessie Christiansen	NEXSci/ CalTech
Rachel Bean	Cornell U
Ryan Hickox	Dartmouth
Dimitri Mawet	CalTech
David Spergel	Simons Foundation (ex-officio)
Jeremy Kasdin	U. San Francisco (ex-officio)
Roeland van der Marel	Science Center (STScI) (ex-officio)
Lee Armus	Science Center (IPAC) (ex-officio)

Roman Space Telescope Advisory Committee (2020 - …)

- Charged to provide advice to the STScI director on Roman Science Operations

Beth Willman(Chair)	Aura
Zeljko Ivesic	U. Washington
Zachory Berta-Thompson	University of Colorado
Enzo Branchini	Universita Roma Tre
Wendy Freedman	University of Chicago
Joshua Frieman	Fermi National Laboratory
Lori Lubin	University of California, Davis
John Mather	GSFC
Kristen McQuinn	Rutgers University/University of Texas at Austin
Matthew Penny	Louisiana State University
Adam Riess	Johns Hopkins University/STScI
David Spergel	Simons Foundation (ex-officio)
Dominic Benford	NASA/HQ(ex-officio)
Julie McEnery	GSFC (ex-officio)
Neill Reid	STScI ex-officio)

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Backup

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SDT #1 Charter (key points)

“The SDT is to provide science requirements, investigation approaches, key mission parameters, and any other scientific studies needed to support the definition of an optimized space mission concept satisfying the goals of the WFIRST mission as outlined by the Astro2010 Decadal Survey.”

“In particular, the SDT report should present assessments about how best to proceed with the WFIRST mission, covering the cases that the Euclid mission, in its current or modified form, proceeds to flight development, or that ESA does not choose Euclid in the near future.”

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SDT #1 Membership

name	affiliation	expertise
J. Green	Univ. of Colorado/CASA (Co-Chair)	UV Instrum
P. Schechter	MIT (Co-Chair)	Theory
R. Bean	Cornell University	(BAO/Alternate Gravity,CMB) Theory-Obs
C. Baltay	Yale	DE
C. Bennett	JHU	DE, BAO, mission development
D. Bennett	Univ. of Notre Dame	EXOP (ML)
R. Brown	STScI	Exoplanet
C. Conselice	Univ. of Nottingham	Surveys
M. Donahue	Michigan State Univ.	galaxy clusters
S. Gaudi	Ohio State Univ.	ExoP (ML)
T. Lauer	NOAO	WL/SN; Mission development
B. Nichol	Univ. of Portsmouth	BAO
S. Perlmutter	Univ. of Berkeley / LBNL	DE (SN)
B. Rauscher	GSFC	IR detectors
J. Rhodes	JPL	DE, WL, detectors
T. Roellig	Ames	Tech/Manag
D. Stern	JPL	IR Surveys
T. Sumi	Nagoya Univ.	Exop (ML)
A. Tanner	Georgia State Univ.	Exoplanet
Y. Wang	Univ. of Oklahoma	Theory/observations
E. Wright	UCLA	IR Surveys - WISE PI
N. Gehrels	GSFC (Ex-Officio)	
R. Sambruna	NASA HQ (Ex-Officio)	
W. Traub	JPL (Ex-Officio)	

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SDT #2 Charter (key points)

- **The SDT is to continue the development of science requirements, investigation approaches, key mission parameters, and any other scientific studies needed to support the refinement and optimization of a space mission concept (Design Reference Mission) to further the science priorities described in NWNH for a wide field infrared survey telescope and maturation of technology and science for an exoplanet direct imaging mission. Justification for conducting the proposed science investigations from space and an assessment of how such investigations will complement existing and planned domestic and international ground and space facilities should continue to be addressed in the SDT's report.**
- **The SDT and Astrophysics Focused Telescope Assets (AFTA) Study Office will update the April 2013 Design Reference Mission (DRM) and document the effort in a study report. The AFTA Study Office will develop cost and schedule scenarios that address both optimal build scenarios as well as other funding profiles that might be provided during the course of the study. Overall mission cost is to be kept as low as possible while still achieving all or part of the science priorities for a wide field infrared survey telescope and exoplanet technology and science maturation. A descopable internal coronagraph instrument for the detection and study of exoplanets will be included in the design reference mission, consistent with the design reference and requirements for the existing telescope asset and the IR survey. Modularity to facilitate emerging robotic servicing capabilities shall also continue to be studied.**

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SDT #2 Membership

Name	Affiliation
David Spergel	Princeton
Neil Gehrels	Goddard
James Breckinridge	Caltech
Megan Donahue	Michigan State U
Alan Dressler	Carnegie Institution
Chris Hirata	Caltech
Scott Gaudi	Ohio State U.
Thomas Greene	Ames
Olivier Guyon	U. Arizona
Jason Kalirai	STScI
Jeremy Kasdin	Princeton
Peter Lawson	JPL
Warren Moos	Johns Hopkins U.
Saul Perlmutter	Berkeley
Marc Postman	STScI
Bruce Macintosh	Stanford

Name	Affiliation
Bernie Rauscher	Goddard
Jason Rhodes	JPL
David Weinberg	Ohio State U.
Yun Wang	U. Oklahoma
Dave Bennett	Notre Dame
Charles Baltay	Yale
Toru Yamada	Tohoku U., Japan
Yannick Mellier	IAP, France
Dominic Benford	HQ
Wes Traub	JPL
Bernie Rauscher	Goddard
Ex officio	
George Helou	Caltech-IPAC
Roc Cutri	Caltech-IPAC
Mike Seiffert	JPL

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FSWG Charter (key points)

- **The FSWG is to continue the development of science requirements, investigation approaches, key mission parameters, and any other scientific studies needed to support the refinement and optimization of the Phase A Design Reference Mission (DRM) to further the science priorities described in NWNH for a wide field infrared survey telescope and maturation of technology and science for an exoplanet direct imaging mission.**
- **The FSWG and WFIRST Study Office (hereafter referred to as the Project Office, assuming Formulation has been entered) are to update the existing DRM and document the effort in annual presentations. This shall include several facets for the FSWG:**
  - Refine science requirements and performance metrics and objectives for the WFIRST telescope, instrumentation, software, operations, and other aspects of the program,
  - Participate in negotiations involving the observatory/science interfaces,
  - Participate in refining the mission design,
  - Participate in the refinement of project science plans and the philosophy for defining and conducting the science program,
  - Recommend solutions to technical and resource problems during the development and implementation phases of the mission.
- **Overall mission cost is to be kept as low as possible while still achieving all or a critical part of the science priorities for a wide field infrared survey telescope and exoplanet technology and science maturation.**
- **The FSWG shall evaluate all areas identified by the selected SITs, with special attention to several overarching subjects:**
  - Requirements development, refinement and flowdown, including calibration
  - Operations concept refinement, survey yield predictions and survey efficiency drivers, including calibration
  - Optimization of observatory to reduce risk and minimize cost
  - Optimization of the observatory to address any changes in the scientific landscape
  - Payload performance assessments
- **The FSWG shall participate in WFIRST Project reviews in order to coordinate scientific requirements and assist the WFIRST Project in mission decisions as they relate to the scientific objectives.**

RSIG Charter

- The *Roman* Science Interest Group (RSIG) will provide broad-based community input to the *Roman* project and NASA headquarters. Its primary purpose is to assist NASA in ensuring that the interests of the scientific community are served by the *Roman* project in planning for and executing *Roman* development and operations.
- The RSIG will provide input to the *Roman* Project and NASA HQ on the structure of future science team and investigation calls; user support functions across the *Roman* project; considerations for defining and conducting the science program, including time allocation; and other science needs as requested by the project or program.

WFIRST Science Assessment Team (2019)

- NASA HQ has chartered a group to review the WFIRST Level-1 and Level-2 requirements and provide options for potential changes that might reduce cost or reduce cost risk in the future.
- Such suggestions would not affect the mission architecture, but could affect approaches to requirements verification.
  - Could save on test equipment or test time during Integration and Test
- Schedule:– Final report: January 15

- **Membership:** John MacKenty (chair), Lee Feinberg, Cynthia Froning, Adam Riess, Glenn Schneider, Michael Schneider, Michael Strauss, Alycia Weinberger; Dominic Benford (HQ) and Jeff Kruk (PS)