



*Working with your Research  
Development Office to Support Team  
Science*

# Overview

- Introductions
- What is Research Development?
- Building a Research Development office focused on Team Science support
- TS tools available to help
- Advice for working with your Research Development office

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# What is Research Development?

“Research Development encompasses a set of **strategic, proactive, catalytic, and capacity-building** activities designed to facilitate individual faculty members, teams of researchers, and central research administrations in attracting extramural research funding, creating relationships, and developing and implementing strategies that increase institutional competitiveness.”

--National Organization of Research Development Professionals ([nordp.org](http://nordp.org))

NORDP 2020: May 17-20, 2020, San Antonio, TX

# Research Development for Team Science

- What
  - Navigation and support for collaboration, cross-disciplinary research, research teams, and grantsmanship for collaborative opportunities
- How
  - Focusing on connecting the *science* of team science (empirical research on scientific teams) and the *praxis* of team science (the practical aspects of conducting science in teams)
- Who
  - Translate empirical research findings about team science into evidence-based effective practices for scientific teams, team leaders, and institutional leadership

# Research Development for Team Science

- Collaboration Facilitation
  - Collaborator identification and referral/facilitation
  - Catalytic research development events (e.g., interdisciplinary meetings, research symposia)
- Proposal Development
  - Collaborative research & funding opportunity identification
  - Grantsmanship & proposal development support for collaborative grant opportunities
- Team Science Training
  - Team science grantsmanship training
  - TeamScience.net online tool
  - Leadership training
  - Collaborative Communication Workshops
- Policy
  - Appointment, Promotion & Tenure guidelines

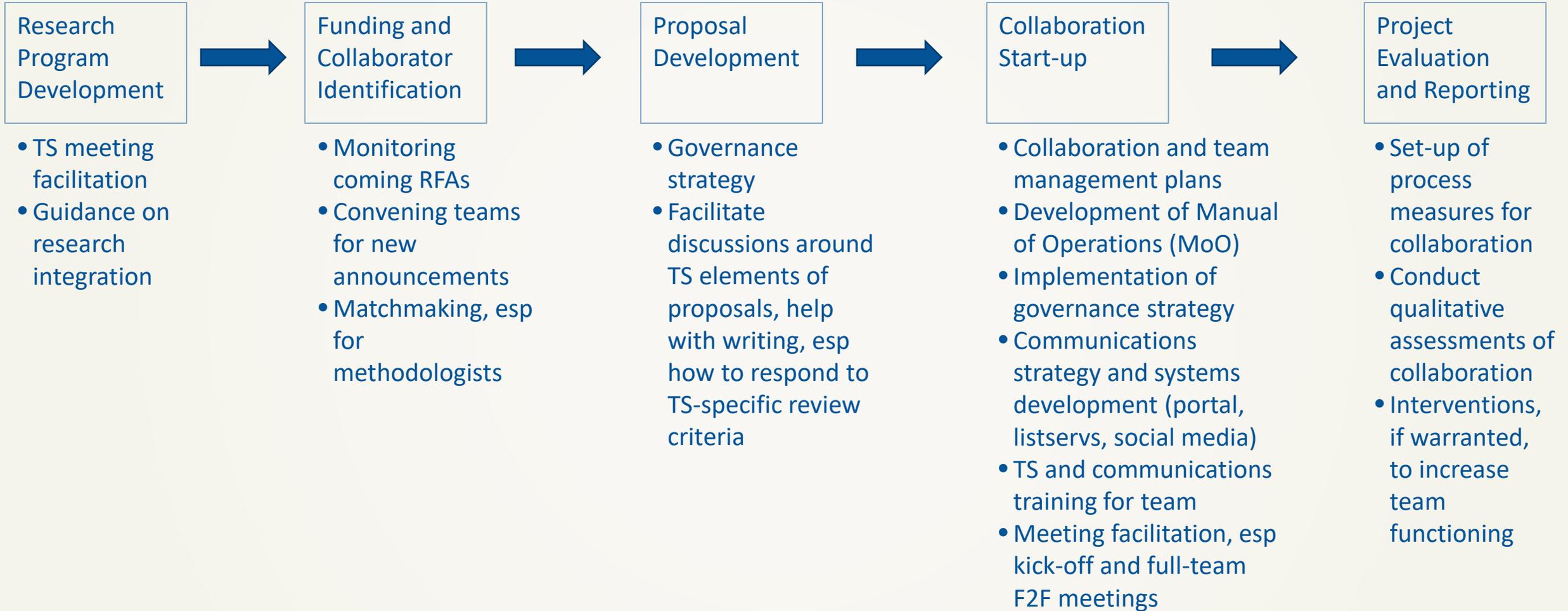
# Building a New RD office focused on TS Support

- New position: Director of Team Science + Research Development
  - 25% Carbone Cancer Center (UWCCC)
  - 25% Institute for Clinical and Translational Science (ICTR, our UW CTSA, as Director of the Team Science core)
  - 25% School of Medicine and Public Health (SMPH)
- Areas of Focus:
  - Providing RD and TS support for team-based proposals
  - TS education for individuals and teams
  - TS interventions for new teams or struggling teams
  - Science of Team Science research (ICTR)

# Needs assessment at UW: What is the problem we are trying to solve?

- Low levels of federal funding vs comparable large R1 institutions
- High levels of institutional funding (pilots, internal grant programs) – reduced motivation to submit large grants
- Need to turn UWCCC and ICTR pilots into federal funding
- Low levels of large, team-science projects (U, P, multi-PI, etc.) – organizational barriers and lack of incentives to submit
- Support for team science is minimal, scattered, not discoverable, and not widely available
  - Objective: to increase education about what's available and what's necessary
- Overarching Goal:
  - To slowly, iteratively build a suite of evidence-based services available to large teams

# Team Science Services



# Intake Process

- We can't help everyone (hopefully)
- Started by prototyping processes with individuals or very small teams
- As we build to larger teams, need to create criteria for who gets our limited resources. Possible criteria:
  - Institutional priority areas
  - Funding agency priority areas (esp for UWCCC and ICTR center grants)
  - Complexity of proposal's team-science or interdisciplinarity requirements
  - Size of team
  - Amount of funding
  - Maturity of the team

# Metrics (under development)

- **Goal: assess the team-science services and their impact**
- How are the supported teams doing?
  - Measures of collaboration (HFK to discuss tool)
  - Long-running teams (teams work together long-term: via grants and publications)
- How are we doing with the services we provide?
  - Strong demand for team-science services
  - Satisfaction surveys: were we helpful, did the teams feel they got the help needed?
  - Resources available for teams and usage of those resources (e.g., governance plans, authorship policies, multi-PI plan samples)
  - # teams submitted grants with TS sections or review criteria that we helped
  - # new teams convened for coming RFAs or high-priority topics
  - # grant kick-off meetings convened and facilitated
  - # team-science interventions delivered to both nascent and established teams
  - # evaluation plans developed and supported
  - # individuals and teams trained in TS best practices
  - \$ submitted and secured

# Science of Team Science

- **Develop evidence-base and training for support of *Team Science Facilitators***
- Goal of TSFs: To offload the “collaboration work” of Team Science onto a trained facilitator with deep scientific knowledge
- Potential activities:
  - Strategic planning
  - Collaboration development
  - Facilitating difficult and contentious discussions (as well as warm and cuddly ones)
  - Leading frequent, iterative, and corrective program evaluations
  - Developing and implementing consortium-level metrics of success
  - Planning next steps, particularly scientific and policy translation
  - Identifying synergies across intraconsortium projects, as well as making connections with related projects elsewhere

Commentary

**On the Facilitation of Collaborative Research:  
Enter Stage Left, the Consortium Director**

Betsy Rolland<sup>1</sup> and John D. Potter<sup>2,3,4</sup>

Cancer Epidemiology, Biomarkers & Prevention



November 1 2017 (26) (11) 1581-1582; DOI: 10.1158/1055-9965.EPI-17-0471

**Goal: To craft an intervention and test across the CTSA**



*TS Tools RD Professionals Use*

# SciTS Group on Mendeley

The image shows a screenshot of the Mendeley group page for 'Science of Team Science (SciTS)'. The page is divided into several sections:

- Group Header:** 'Science of Team Science (SciTS)' is listed as a 'PUBLIC GROUP' in the 'Social Sciences' category. It includes an 'Invite members' button and navigation tabs for 'Overview', 'Members', 'Documents', and 'Settings'.
- About group:** A description states: 'A forum to promote cross-disciplinary and inter-professional knowledge transfer around team science, scientific collaboration, and the science of team science research, a powerful evidence-base for effective practices.'
- Group admins:** Holly Falk-Krzyszinski is listed as the 'Owner'.
- Documents:** A list of documents is displayed, including 'From innovation to implementation: team science two years on' by The Academy of Medical Sciences, published in 2019. Other documents include 'What It Takes to Make Collaboration Work?' (2015), 'International research collaboration: novelty, conventionality, and atypicality in knowledge recombination' (2018), and 'Academic Recognition of Team Science: How to Optimize the Canadian Academic System' (2017).
- Details Panel:** On the right, a detailed view of the document 'From innovation to implementation: team science two years on' is shown. It includes the author 'The Academy of Medical Sciences', a type of 'Report', and an abstract discussing the recognition of team science contributions in biomedical research careers.

[https://www.mendeley.com/community/science-of-team-science-\(scits\)/](https://www.mendeley.com/community/science-of-team-science-(scits)/)

# P&T Policy Recommendations

G Model  
RESPOL-3397 No. of Pages 7  
ARTICLE IN PRESS  
Research Policy xxx (2017) xxx-xxx  
Contents lists available at ScienceDirect  
Research Policy  
journal homepage: www.elsevier.com/locate/respol

Research note  
Interdisciplinary and collaborative work: Framing promotion and tenure practices and policies  
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organizational policy and management  
innovation

ABSTRACT  
Interdisciplinarity and collaboration are keywords for change in the 21st century. Both, however, face challenges across the entire academic system, from administrative policies and budget formulas to disciplinary cultures of research and education. This Research Note is the first synthesis of findings from literature and models for practices and policies that recognize interdisciplinary and collaborative work in the promotion and tenure (P&T) process, brought together in a table of recommendations. Creating a culture of reward requires consistency, alignment, and comprehensiveness at all stages and levels of evaluation, from defining expectations in the initial appointment to preparing individual candidates' dossiers to incorporating appropriate criteria. Several organizations have led the way in formulating recommendations for recognizing interdisciplinary and collaborative work. Professional societies and academic administrators at local levels are also providing leadership. Institution-wide policies are rare though do exist. More often individuals are issuing guidelines for appropriate evaluation. A number of studies have also called for widening definition of what counts for consideration, including innovative, applied, and commercial research and development. The overriding lesson to emerge is the importance of a systematic and informed approach.

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1. Introduction: the need for a framework  
Interdisciplinarity and collaboration are both mantras for change in the 21st century. Two reports document the current heightened interest and state of the art: *Facilitating Interdisciplinary Research* (National Research Council, 2004) and *Enhancing the Effectiveness of Team Science* (National Research Council, 2015). Not all interdisciplinary research is conducted by teams. Individuals collaborate within disciplinary and professional domains. However, the two terms are coupled increasingly because interdisciplinary collaboration is widely considered essential to addressing complex scientific and societal problems that require the expertise of more than one discipline. Both terms also appear in conjunction with the rhetoric of innovation and R&D partnerships bridging the academy and industry. Despite powerful endorsements and authoritative accounts, however, both interdisciplinary and collaborative research are unevenly institutionalized. They face challenges across the entire academic system, from administrative policies and budget formulas to disciplinary cultures of research and education. Promotion and tenure (P&T) also loom large in accounts of barriers and disincentives.

In a preliminary data-gathering survey for the 2004 report on *Facilitating Interdisciplinary Research*, provosts ranked promotion the top of five major impediments to interdisciplinary research on their campuses. The 2015 report on *Enhancing the Effectiveness of Team Science* also noted most universities lack comprehensive and explicit criteria for evaluating individual contributions to team-based research. As a result, individuals face a double handicap. Their work is judged typically by discipline-based standards, and their contributions to collaborative research are under-valued if they are not first author on publications or principal investigator on a grant. This Research Note provides a defining framework for all parties to the P&T process, including faculty, chairs and directors, review committees and external evaluators, administrators and managers, as well as professional organizations. Without a common framework, local efforts are often hindered by lack of articulation and precedent, placing them behind peer administrators and institutions.

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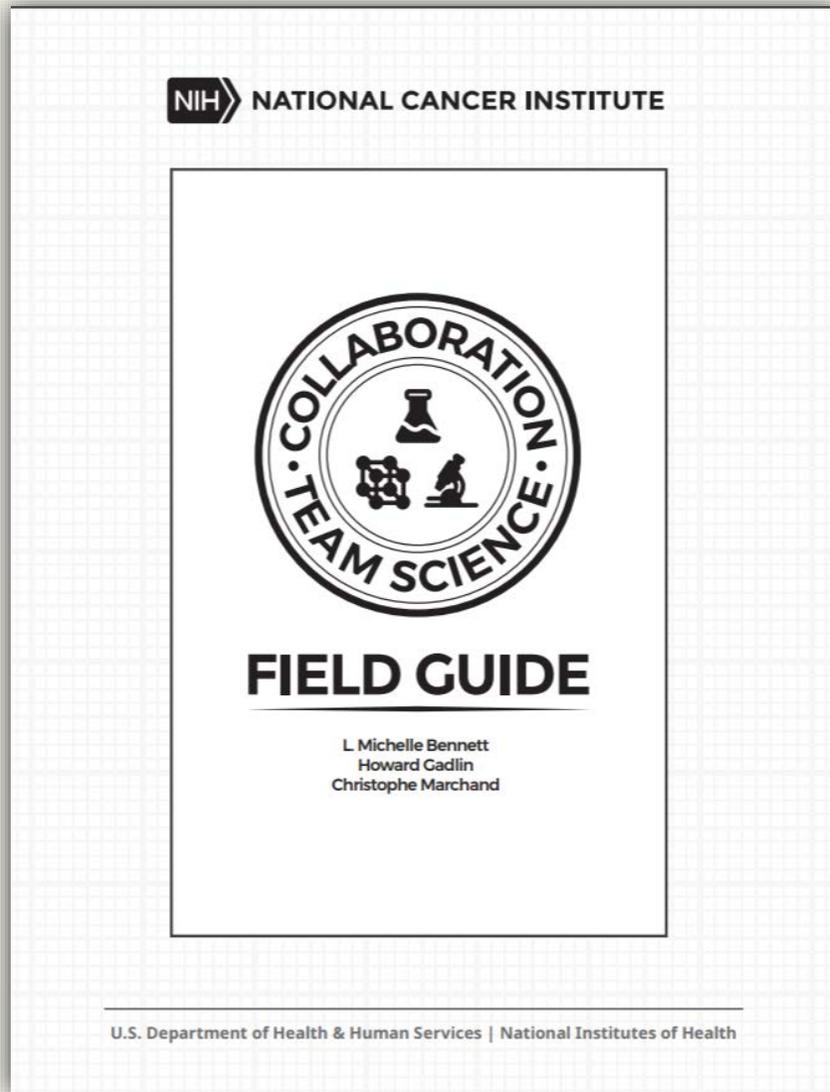
Mendeley Desktop  
File Edit View Tools Help  
Add Folders Related Sync Help

Research data policies & practices  
Research Data Sharing  
Research Note on Interdisciplinary Practices & Finding Collabora...  
Science of Team Science (SciTS)  
Authorship, Coauthorship, Publishing Issues  
Bibliometrics, Scientometrics, Informetrics & SNA  
CAHS Team Science Study  
Cognition and Learning in Collaborations  
Collaboration Literature  
Collaboration Readiness and Integrity in Collaboration  
Communication & Knowledge Exchange\_Integration  
Community Research & Team Science  
Conflict Management, Resolution, and Team Intervention  
Convergence  
CTSA Developing Measures for Assessing and Improving ...  
Distributed Collaboration\_Virtual Teams\_ICTs  
Economics of Collaboration  
Educational Aspects/Teaching Interdisciplinarity  
Ethics/RCR & Team Science  
Evaluating IDR\_Collaboration\_Team Science  
Funding and Grants  
Gender & Diversity Issues in Collaboration and TS  
Global Health  
Innovation, Creativity & Entrepreneurship in Team Science  
Interdisciplinarity (list collated March 2016)  
Interdisciplinary Research, TS and SciTS  
International\_Global Collaboration  
Joint Appointments  
Leadership, Coaching and Team Composition  
Measuring Interdisciplinarity  
Multilevel Analysis  
Must Read  
Organizational & Institutional Issues  
Physical Infrastructure to Support Team Science  
Productivity  
Research Centers  
Reward & Recognition\_Promotion and Tenure  
Sociotechnical Communication of Teams  
Team Assembly and Dynamics  
Team Measurement Scales  
Team Processes

Reward & Recognition\_Promotion and Tenure in Science of Team...

Overview	Documents	Members
★	Authors	Title
★	Klein, Julie Thompson; Falk-Krzesinski, Holly J.	Interdisciplinary and collaborative work: Framing promotion and tenure practices and policies
★	Choucri, Nazli; Weck, Olivier de; Moavenzadeh, Fred	Promotion and Tenure for Interdisciplinary Junior Faculty
★	Klein, Julie Thompson; Falk-Krzesinski, Holly J.	Interdisciplinary and collaborative work: Framing promotion and tenure practices and policies
★	Canadian Academy of Health Sciences	Academic Recognition of Team Science: How to Optimize the Canadian Academic System
★	Klein, Julie Thompson; Banacki, Amanda; Falk-Krzesinski, Holly J.	Promotion and Tenure in Interdisciplinary Team Science: Introductory Literature Review
★	Rikakis, Thanassis	Innovative faculty evaluation criteria for incentivizing interdisciplinary collaboration
★	Disis, Mary L; Slaterry, John T	The Road We Must Take: Multidisciplinary Team Science
★	Pfirman, Stephanie; Martin, Paula; Berry, Leonard; Fletcher...	Interdisciplinary Hiring, Tenure and Promotion: Guidelines for Individuals and Institutions
★	National Research Council	Enhancing the Effectiveness of Team Science
★	Antes, A.L.; Mart, Adeline; DuBols, J.M.	Are Leadership and Management Essential for Good Faculty? An Interview Study of Genetic Researchers
★	Cassuto, Leonard	The Changing Face of Scientific Collaboration
★	McGlynn, Terry	The Credit System in Science is Outdated
★	Paul-Hus, Adèle; Desrochers, Nadine; Rijcke, Sarah de; Rus...	The Reward System of Science: Special Issue
★	Derrick, Edward G; Falk-Krzesinski, Holly J; Roberts, M...	Facilitating Interdisciplinary Research and Education: Practical Guide
★	Jeschke, Jonathan M; Kaushal, Sujay S; Tockner, Klement	Diversifying Skills and Promoting Teamwork in Science
★	University of Virginia School of Medicine, Faculty Affairs and ...	Promotion and Tenure Policy
★	University of Southern California, Joint Provost-Acad...	Guidelines for Assigning Authorship and for Attributing Contributions to Research Products and Creative Works
★	Nora, L M; Pomeroy, C; Curry, T E; Hill, N S; Tibbs, P a; Wils...	Revising appointment, promotion, and tenure procedures to incorporate an expanded definition of scholarship: the
★	Texas A&M Health Science Center	Guideline: Faculty Appointment, Promotion, and Tenure
★	Duke University	Interdisciplinary Studies at Duke
★	Harvard University Medical School	Authorship Guidelines
★	George Washington University School of Medicine and Health...	Faculty Guide for Appointments, Promotions, and Tenure
★	The Academy of Medical	Improving recognition of team science contributions

# A Field Guide/Partner Agreement



- Overall Goals & Vision
- Who Will Do What
- Sharing/Storing Reagents & Data
- Authorship, Credit
- Contingencies & Communicating
- Conflict of Interest

<https://www.cancer.gov/about-nci/organization/crs/research-initiatives/team-science-field-guide>

# Toolbox Dialogue Initiative



A Toolbox Dialogue Initiative (TDI, formerly [Toolbox Project](#)) ‘Collaborative Communication Workshop’ provides a philosophical yet practical enhancement to cross-disciplinary, collaborative science. Rooted in philosophical analysis, the Toolbox workshop enables investigators, research development professionals, project managers, and collaborators to engage in a structured dialogue about their research assumptions and cross-disciplinary collaboration. This yields both self-awareness and mutual understanding, supplying individuals with the robust foundation needed for effective collaborative research. Led by Toolbox Project Facilitators, Workshop participants will engage in small group discussion and share respective views in response to a number of probing statements about science motivation, methodology, confirmation, objectivity, values, and reductionism.

# Individual Collaboration Readiness Tool



MATRICx

The Motivation Assessment for Team Readiness, Integration, and Collaboration

- The Motivation Assessment for Team Readiness Integration and Collaboration (MATRICx) is a psychometric instrument that measures motivations and threats to collaboration in knowledge producing teams (KPTs) of biomedical and health professionals. It is calibrated using Rasch analysis and provides users with individual, team, and composite profiles of collaborative and cooperative strength.

<http://matricx.net/>

# Collaboration Success Wizard

- On-line diagnostic survey for geographically distributed collaborations. The survey probes factors that may strengthen or weaken the collaboration. The Wizard provides both personal and project-level reports to help build successful and productive collaborative projects.



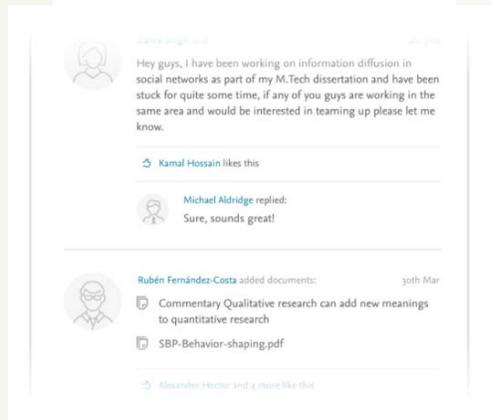
<http://hana.ics.uci.edu/wizard/>

# Mendeley to Support Collaboration



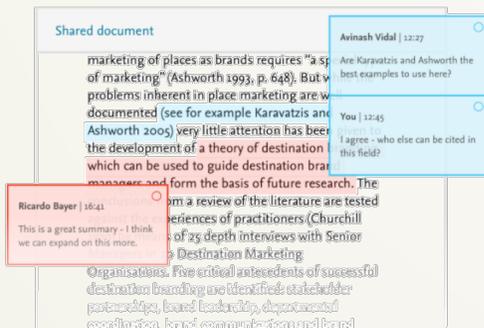
## Collaborate with colleagues worldwide

Create a new group dedicated to your topic and invite colleagues from all over the world to join. You can also create Private Groups that are only visible to invited members, letting you share information securely. Groups make it easier to discover ideas and inspire new ones.



## Engage in interesting discussions

Connect with like-minded researchers in institutions around the world so that you can combine your knowledge and find new avenues for research.



## Curate and share reading lists

You can browse other members' public reading lists to discover relevant content. You can also review articles with your collaborators. When a group member adds a note/highlight/summary to a document, the edit is visible to all members of the group

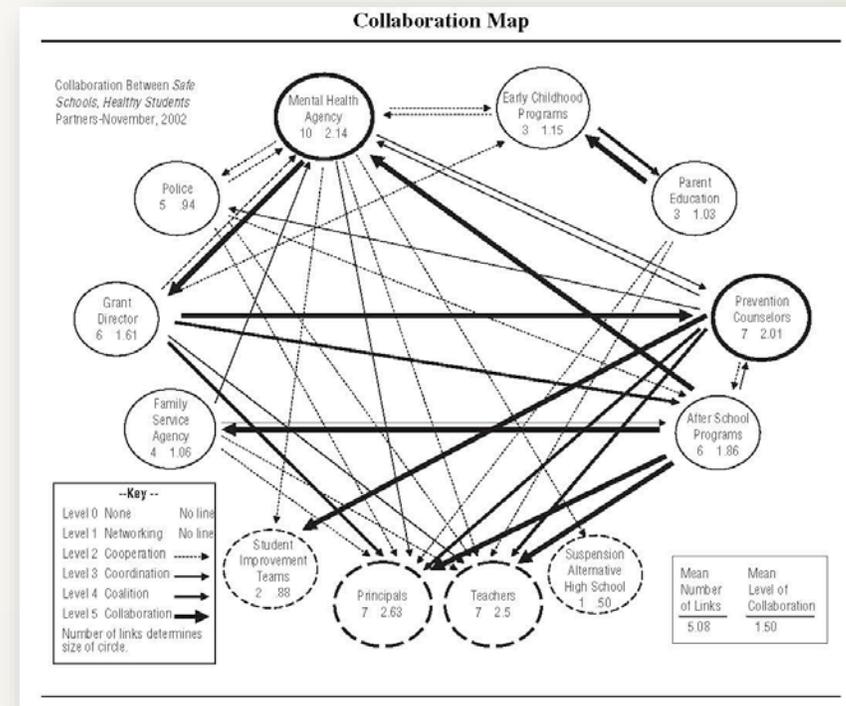
# Levels of Collaboration Survey

**LEVELS OF COLLABORATION SURVEY**

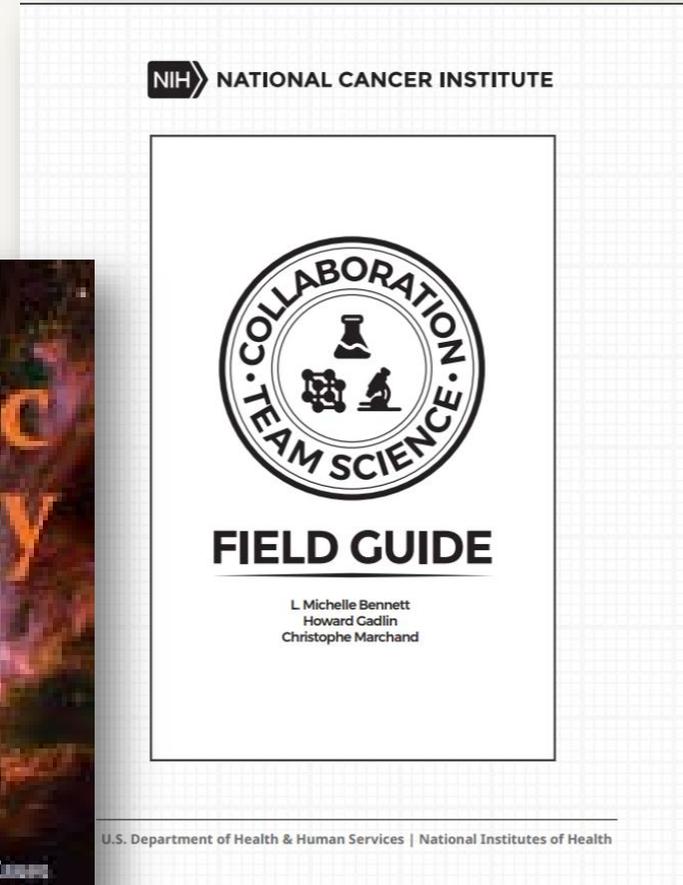
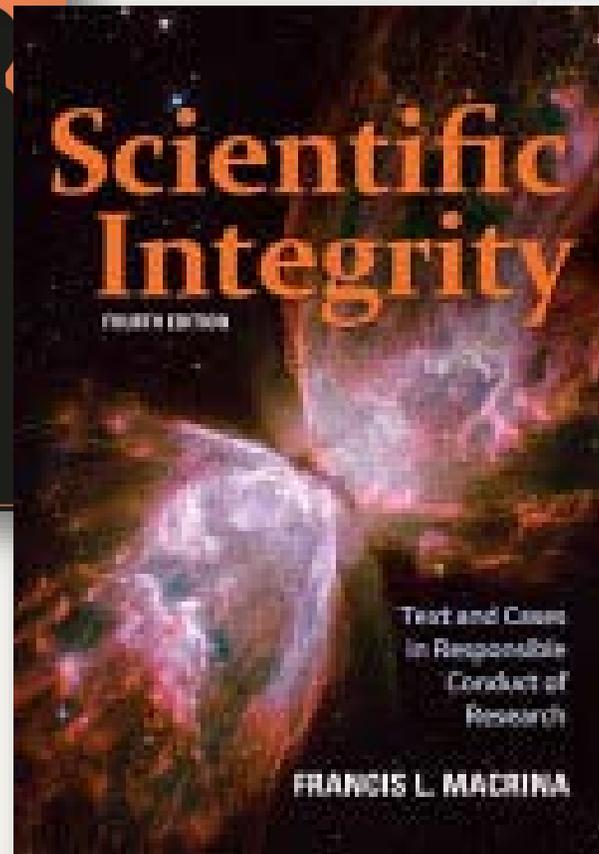
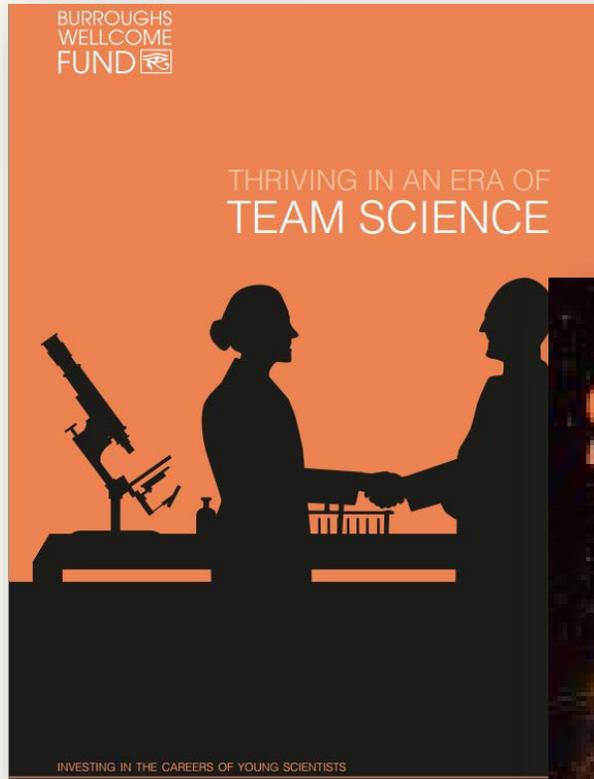
This form is designed for those who work in one of the organizations or programs that are partners in the *Safe Schools, Healthy Students* initiative. Please review these descriptions of different levels of collaboration.

- On the response section at the bottom of the page, please circle the name of the organization or group with which you are associated.
- Using the scale provided, please indicate the extent to which you currently interact with each other partner. (Skip your own row.)

Five Levels of Collaboration and Their Characteristics						
Relationship Characteristics	Networking 1	Cooperation 2	Coordination 3	Coalition 4	Collaboration 5	
	-Aware of organization -Loosely defined roles -Little communication -All decisions are made independently	-Provide information to each other -Somewhat defined roles -Formal communication -All decisions are made independently	-Share information and resources -Defined roles -Frequent communication -Some shared decision making	-Share ideas -Share resources -Frequent and prioritized communication -All members have a vote in decision making	-Members belong to one system -Frequent communication is characterized by mutual trust -Consensus is reached on all decisions	
<i>Safe Schools, Healthy Students</i> Partners	No Interaction at All	Networking	Cooperation	Coordination	Coalition	Collaboration
Mental Health Agency	0	1	2	3	4	5
Early Childhood Programs	0	1	2	3	4	5
Parent Education Program	0	1	2	3	4	5
School District Prevention Counselors	0	1	2	3	4	5
After School Programs Director	0	1	2	3	4	5
Student Improvement Teams	0	1	2	3	4	5
Principals	0	1	2	3	4	5
Teachers	0	1	2	3	4	5
Police Department	0	1	2	3	4	5

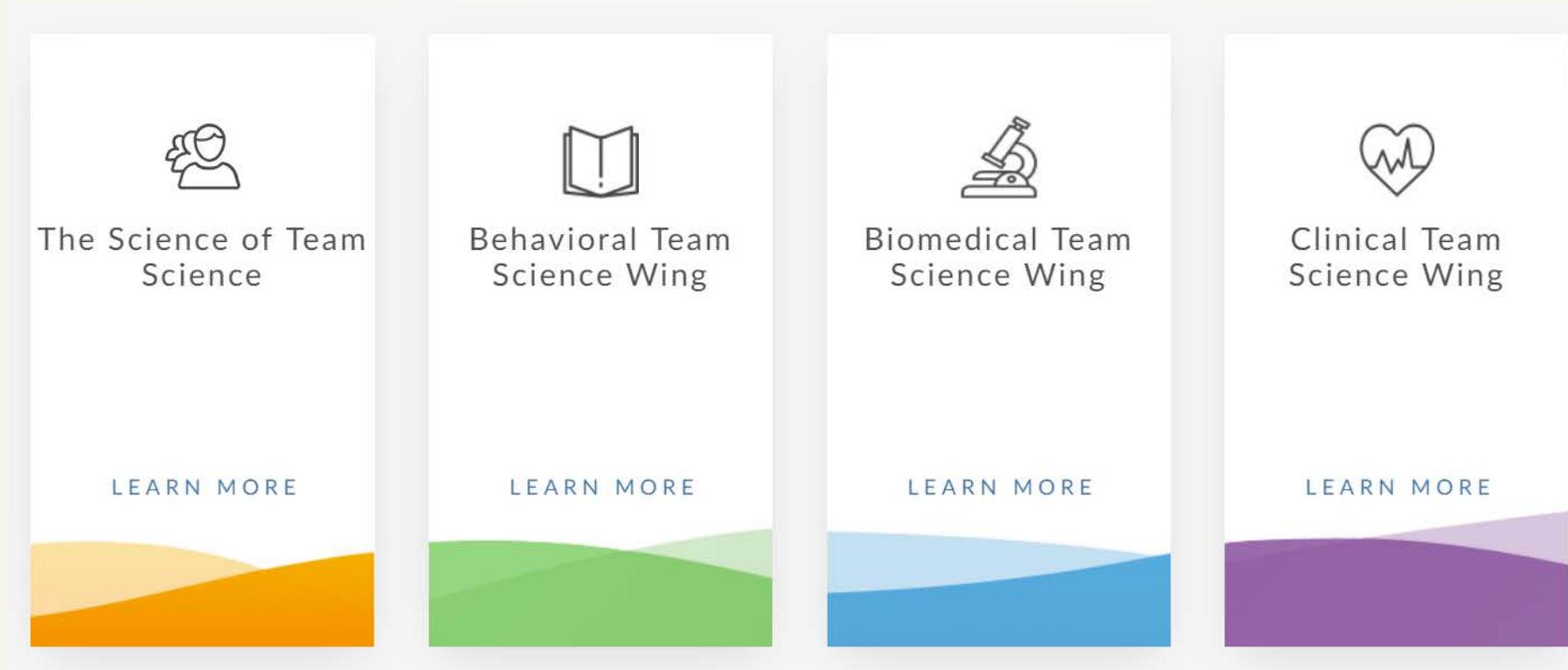


# Case Studies: Portable Team Science Training



# TeamScience.net

- Learn to perform trans-disciplinary, team-based translational research



[www.teamscience.net](http://www.teamscience.net)

# Collaboration Plan Development

COMPONENT	CONSIDERATIONS	COMPONENT	CONSIDERATIONS
<b>1 Rationale for Team Approach &amp; Configuration</b>  <ul style="list-style-type: none"> <li>Justify <b>why a team approach</b> is necessary to meet the <b>research objectives</b>.</li> <li>Describe <b>why the team configuration</b> meets the proposed research objectives (e.g., how each team member uniquely contributes).</li> </ul>	<ul style="list-style-type: none"> <li>As the number of <b>collaborators increases</b>, so do the <b>potential challenges</b>.</li> <li>For <b>interdisciplinary teams</b>, the disciplines must be "scientifically ready" for collaboration.</li> <li><b>Not all research questions are best addressed using a team approach</b> or require a large, complex, or distributed team.</li> <li>Generally, a team should <b>not include more researchers than necessary</b>, but should include <b>sufficient breadth</b> to gather the needed scientific expertise.</li> </ul>	<b>6 Leadership, Management, &amp; Administration</b>  <ul style="list-style-type: none"> <li>Describe the <b>leadership and management approaches</b> that will be used to address the other components in the collaboration plan, given the <b>specific team context</b> that has been proposed (e.g., the individual team members, team characteristics, involved institutions and organizations).</li> </ul>	<ul style="list-style-type: none"> <li>There are <b>numerous approaches to leadership</b> (e.g., hierarchical, heterarchical, transformational, transactional). The most successful outcomes are produced by combining various approaches as appropriate to the context.</li> <li><b>Leadership and management are key influences on the success</b> of a scientific collaboration.</li> <li>More complex team science initiatives require more sophisticated leadership and management approaches.</li> </ul>
<b>2 Collaboration Readiness</b>  <ul style="list-style-type: none"> <li>Provide evidence for the collaboration readiness of (1) the <b>individual researchers</b>, (2) the <b>team as a unit</b>, and (3) the <b>institution(s) and organization(s)</b> that are involved.</li> <li>A given project may not have high levels of collaboration <b>readiness in all of these areas</b>. A plan may highlight strengths and describe strategies to compensate for any weaknesses.</li> </ul>	<ul style="list-style-type: none"> <li><b>Individual characteristics</b> may increase success (e.g., interdisciplinary or team orientation, preparation for complexities and tensions of collaboration).</li> <li><b>Team history of collaboration</b>, especially teams with some former collaborators and some new members, may increase success.</li> <li><b>Institutional policies, procedures, resources, infrastructure</b> may influence success (e.g., promotion and tenure policies, research development officers, training for team science).</li> </ul>	<b>7 Conflict Prevention &amp; Management</b>  <ul style="list-style-type: none"> <li>Describe <b>strategies and systems for preventing and managing conflicts</b> (e.g., processes for inviting and sustaining diverse perspectives, preventing or managing negative forms of conflict, encouraging debate and facilitating productive forms of conflict, and resolving conflict).</li> <li><b>Many sources of team conflict can be anticipated</b>, and strategies should be developed at the outset.</li> </ul>	<ul style="list-style-type: none"> <li><b>Demographic and disciplinary diversity both may lead to conflict</b>, but the specific areas of conflict, and the ways in which conflicts play out, will vary with the unique combination of types of diversity on the team.</li> <li><b>Team members with similar training may underestimate the potential for conflict</b> as a result of incorrect assumptions about areas of agreement.</li> <li>Subgroups may produce <b>fault lines</b>.</li> </ul>
<b>3 Technological Readiness</b>  <ul style="list-style-type: none"> <li>Document the availability and planned use of technological resources to facilitate: <ul style="list-style-type: none"> <li><b>Data sharing and collaborative data analysis</b> (e.g., data sharing agreements, common data analysis and management software);</li> <li><b>Communication</b> (e.g., video- and teleconferencing, calendaring tools); and</li> <li><b>Coordination</b> (e.g., calendaring, work flow or project management tools).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li><b>TR includes 3 components</b>: (1) technology must be available; (2) members must be willing to use the technologies; and (3) members must have the skills to use them.</li> <li>Additional issues may include: <b>compatibility and interoperability</b> of systems across collaborators; decisions concerning <b>whose systems or processes will be used</b>.</li> </ul>	<b>8 Training</b>  <ul style="list-style-type: none"> <li>Describe a training plan for team members <b>at the start of the collaboration and throughout</b> (e.g., training relevant to team processes, leadership, management, communication, coordination).</li> <li>For <b>interdisciplinary (ID) teams</b>, this plan should involve cross-training in multiple scientific areas, and training in ID science competencies (e.g., critical awareness of the strengths and weaknesses of all disciplines, strategies for combining approaches from multiple disciplines).</li> </ul>	<ul style="list-style-type: none"> <li><b>Ongoing, rather than one-off, training is needed</b> to maintain and build competencies and address evolving needs.</li> <li>Training should be <b>designed to meet a wide variety of needs</b>—by career stage, learning style, interests, and practical constraints (e.g., web-based training for distributed teams).</li> <li><b>Evidence-based training approaches exist for both individuals and teams</b> (e.g., team coordination training, team reflexivity training, cross-training).</li> </ul>
<b>4 Team Functioning</b>  <ul style="list-style-type: none"> <li>Describe <b>strategies that will be used to address key team processes that are essential to effective team functioning</b>.</li> <li><b>Examples of strategies include</b>: development of cooperative agreements and operating manuals, participation in the Toolbox Project-facilitated workshops (<a href="http://www.cals.uidaho.edu/toolbox/">http://www.cals.uidaho.edu/toolbox/</a>), and implementation of team diagnostic surveys for quality improvement.</li> </ul>	<ul style="list-style-type: none"> <li>Strategies should <b>take into account the unique characteristics of the team and the scientific work</b>, such as collaborative history, complexity of the team (e.g., size, diversity, dispersion, task interdependence), phase of the research process.</li> <li>Strategies should be <b>directly tied to achieving key team processes</b> (e.g., generating a shared mission and goals, externalizing group cognition, creating shared mental models, generating shared language).</li> </ul>	<b>9 Quality Improvement Activities</b>  <ul style="list-style-type: none"> <li>Describe what processes will be put in place to ensure <b>continuous quality improvement specific to team functioning</b>. In order to help: <ul style="list-style-type: none"> <li><b>address challenges</b> as they emerge; and</li> <li><b>maintain and enhance the quality</b> of the ongoing collaboration.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Teams that engage in systematic and iterative reflection about team performance and subsequently adapt their team objectives and processes show better performance, including higher levels of innovation.</li> <li>For large or complex teams, it may be helpful to involve outside experts to design and implement quality improvement activities.</li> <li><b>Options range</b> from frequent, brief opportunities for reflection about team performance (e.g., pre-briefing and debriefing) to more in-depth activities (e.g., surveys, facilitated discussions/workshops).</li> </ul>
<b>5 Communication &amp; Coordination</b>  <ul style="list-style-type: none"> <li>Describe <b>ways communication will occur</b> (e.g., meeting frequency and modality).</li> <li>Describe <b>strategies to coordinate day-to-day operations</b> and the achievement of scholarly benchmarks (e.g., work flow, coordination of data).</li> </ul>	<ul style="list-style-type: none"> <li><b>Plans should be specific to your team</b>. For example, <b>distance collaborations</b> increase potential communication and coordination challenges. Communication and coordination styles may vary among collaborators who vary in age, gender, and culture, and for collaborators from different disciplines.</li> <li><b>Greater use of coordination mechanisms</b> leads to more successful outcomes. Direct supervision and face-to-face mechanisms have demonstrated effectiveness. <b>As team complexity and size increase, so does the need for more coordination</b>.</li> </ul>	<b>10 Budget &amp; Resource Allocation</b>  <ul style="list-style-type: none"> <li>Allocate <b>funds</b> in the budget for activities that <b>facilitate the success</b> of the team, as identified in components 1-9.</li> </ul>	<ul style="list-style-type: none"> <li>The prior 9 components all require investments of resources that require financial support. It is necessary to <b>allocate funds</b> to these activities to <b>ensure their successful implementation</b>.</li> <li><b>Clear but flexible plans for funds may produce optimal results</b>. This can be particularly important in larger and more complex initiatives, where there is a greater likelihood for changes to the collaboration over the course of the initiative.</li> </ul>

# Team Science-Specific Review Criteria

## NIH

- Scored (Core) Review Criteria
  - An existing standard Scored Review Criterion
  - Additional team science-specific review elements associated with one or more of the five standard Scored (Core) Review Criteria
  - A new, additional sixth Scored Review Criterion
- Additional Review Criteria
- Extra Review Elements

## NSF

- Additional Solicitation Specific Review Criteria
  - Systems Approach
  - Interdisciplinary Integration
  - Network Structure
  - Management, Organization and Evaluation
  - Transdisciplinarity/Synergy
  - Quality and Value of Collaboration
  - Others

# Team Science Toolkit

 National Cancer Institute at the National Institutes of Health | [www.cancer.gov](http://www.cancer.gov)

## Team Science Toolkit

An interactive website to help you support, conduct and study team-based research.

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**Discover** what resources are available...

"The Toolkit provides a wealth of resources for team scientists, including practical tools to use with your colleagues, such as team assessment guides and training resources."

—Holly Falk-Krzesinski, Vice President,  
Global Academic & Research Relations, Elsevier



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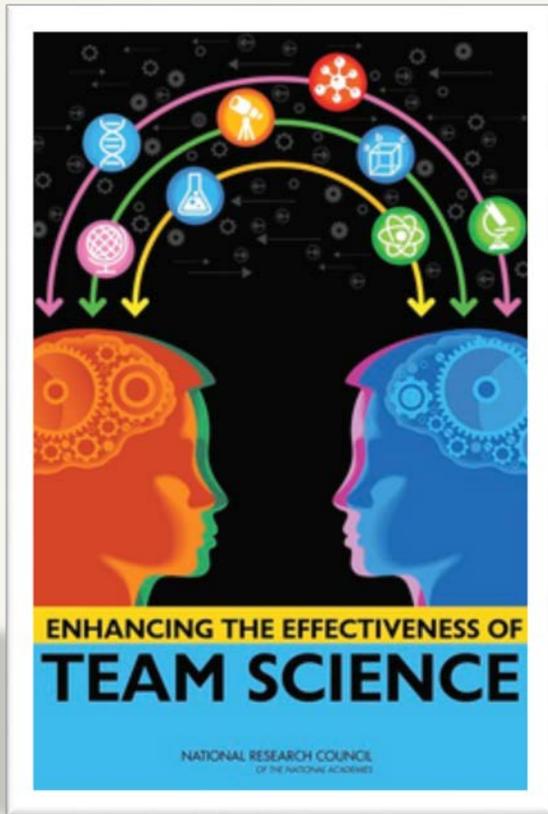
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# National Academies Consensus Report



## BBCSS - TOPICS

- ▶ Cognitive Sciences and Learning
- ▶ Health and Aging
- ▶ National Security and Intelligence
- ▶ Research and Evaluation

## The Science of Team Science

### Project Scope

The NRC will conduct a consensus study on the science of team science to recommend opportunities to enhance the effectiveness of collaborative research in science teams, research centers, and institutes. The science of team science is a new interdisciplinary field that empirically examines the processes by which large and small scientific teams, research centers, and institutes organize, communicate, and conduct research. It is concerned with understanding and managing circumstances that facilitate or hinder the effectiveness of collaborative research, including translational research. This includes understanding how teams connect and collaborate to achieve scientific breakthroughs that would not be attainable by either individual or simply additive efforts. The committee will consider factors such as team dynamics, team management, and institutional structures and policies that affect large and small science teams. Among the questions the committee will explore are:



- How do individual factors (e.g., openness to divergent ideas), influence team dynamics (e.g., cohesion), and how, in turn, do both individual factors and team dynamics influence the effectiveness and productivity of science teams?
- What factors at the team, center, or institute level (e.g., team size, team membership, geographic dispersion) influence the effectiveness of science teams?
- How do different management approaches and leadership styles influence the effectiveness of science teams? For example, different approaches to establishing work roles and routines and to the division of labor may influence team effectiveness.
- How do current tenure and promotion policies acknowledge and provide incentives to academic researchers who engage in team science?
- What factors influence the productivity and effectiveness of research organizations that conduct and support team and collaborative science, such as research centers and institutes? How do such organizational factors as human resource policies and practices and cyberinfrastructure affect team and collaborative science?
- What types of organizational structures, policies, practices and resources are needed to promote effective team science, in academic institutions, research centers, industry, and other settings?

Sponsored by the National Science Foundation and Elsevier, the project began in October, 2012. A report will be issued in late 2014 or early 2015.

### Members

Dr. Nancy J. Cooke, *Chair*, Arizona State University  
Dr. Roger Blandford, Department of Physics, Stanford University



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## Team science

This project sought to understand the current incentives and disincentives for individual researchers participating in 'team science', and how to improve reward and recognition for their contributions.

Status  
Ongoing



[Summary](#) | [Scope of project](#) | [Working Group Members](#) | [2012 roundtable](#)  
[Image competition](#)

'Team science' is becoming increasingly common across all fields of research. Teams spanning different specialties/disciplines and geographical centres are often needed to tackle contemporary

Downloads

 Team Science report - March 2016

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# Canadian Academy of Health Sciences Report



## Canadian Academy of Health Sciences

Evidence for a Healthier Canada / Des données probantes pour un Canada en meilleure santé



ABOUT US FELLOWS OUR WORK NEWS AND EVENTS Language: EN

## Academic Recognition of Team Science: How to Optimize the Canadian Academic System

### Background

Research questions and methodologies have become more complex in recent decades. As a result, successful health science research relies more and more on collaboration among experts across disciplines, institutions, or countries, all working together in research teams. While team science yields many benefits for scientific discovery, it is not without risk for individual team members. Concerns about appropriate recognition for personal contributions and — by extension — career advancement can discourage strong researchers from collaborating in team science projects. The problem lies in how to fairly evaluate the research records of applicants (for advancement, promotion, tenure, or funding) who have devoted much of their activities to team science. This can particularly affect specialists (e.g., biostatisticians, communicators, bioethicists) whose work is often critical to the success of projects led by others. Overall, academic institutions, funding agencies, and research award programs in Canada have been slow to adapt assessment/evaluation processes to recognize the contributions of individual investigators to team science.

The factors that hamper the fair evaluation of individual work performed in a team are numerous. They can exist in institutional structures, in the structure of review committees, and within the actual assessment/evaluation process itself as set forth by universities and funders. This report therefore examines these factors through three lenses: culture and behaviour, review committees, and assessment/evaluation. Promising practices and recommendations are also presented through these lenses.

This assessment was initially proposed by the Canadian Cancer Research Alliance, which also served as one of the sponsors. The other sponsors include Alberta Innovates — Health Solutions, the Canadian Institutes for Health Research, Fonds de recherche

# Elsevier Fostering Collaboration



# Advice for working with your RD Office

Goal: To work closely with your RD office to improve the quality of your institution's large, complex TS proposals (practitioners, administrators)

Consider:

- RD teams have limited resources: Reach out early!
- Think about the specific “asks” you have for your RD team. How can they provide unique help and input not otherwise available to your team?
- How does your proposal add unique value to the institution?

Remember:

- Not all RD offices understand TS, so you may have to do some education

# Advice for working with your RD Office

Goal: To work closely with your RD office to improve the quality of TS being conducted at your institution (TS researchers/interventionists)

Consider:

- RD teams have a high-level view of large, complex proposals and teams so can be a source of referrals and a source of barriers/facilitators and needs assessments
- RD teams are often located within central administration so can help communicate the value of TS interventions
- What will resonate with your leadership to help convince them to invest in TS education?

# Questions?

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