Conceptualizing Convergence
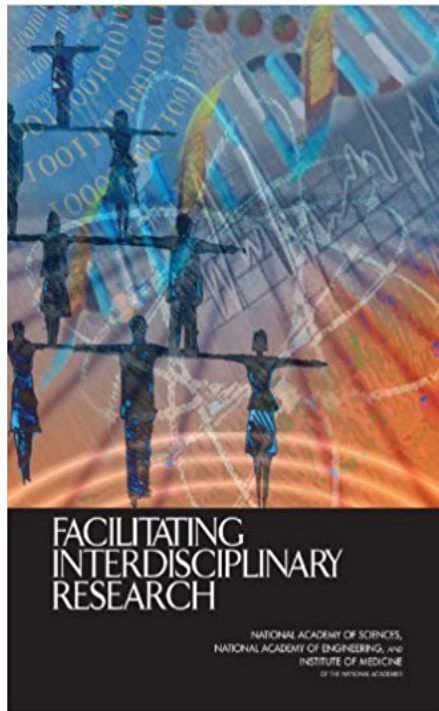
Dan Stokols

Departments of Psychological Science and
Urban Planning and Public Policy
School of Social Ecology
Program in Public Health
College of Health Sciences
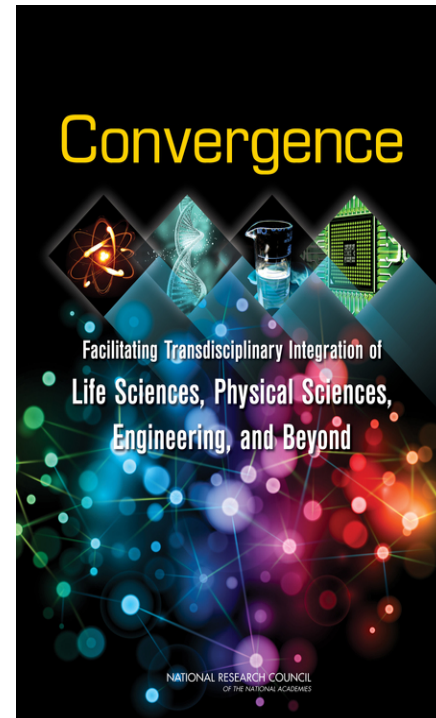*University of California, Irvine*
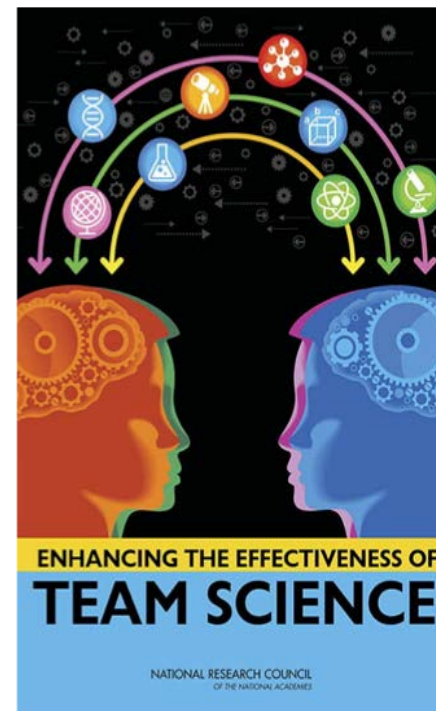
Convergence
A National and Global Priority

(2005)　　　(2014)　　　(2015)　　　(2019)

Hallmarks of Convergent Research

- *Involves deep integration across disciplines and perspectives situated beyond academia*

- *Driven by a specific and compelling problem*

- *Often leads to co-production of knowledge by researchers and diverse stakeholder groups*

(cf., https://www.nsf.gov/od/oia/convergence/index.jsp)

Global Challenges of the 21ˢᵗ Century
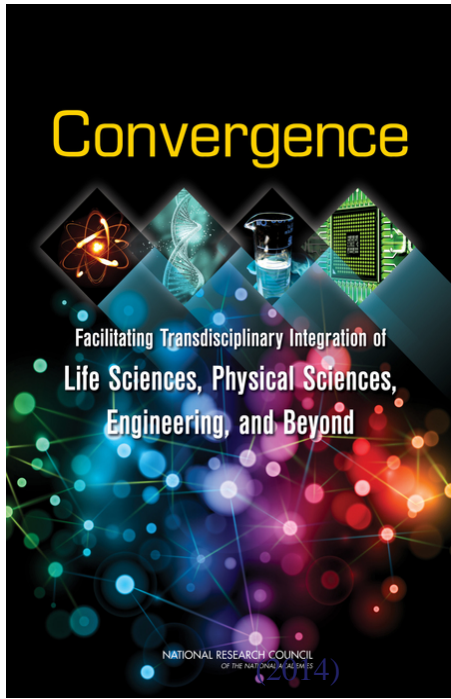
- Environmental

- Public Health
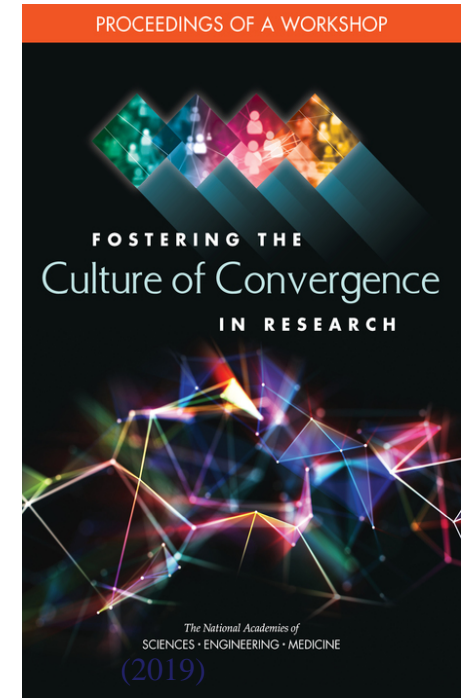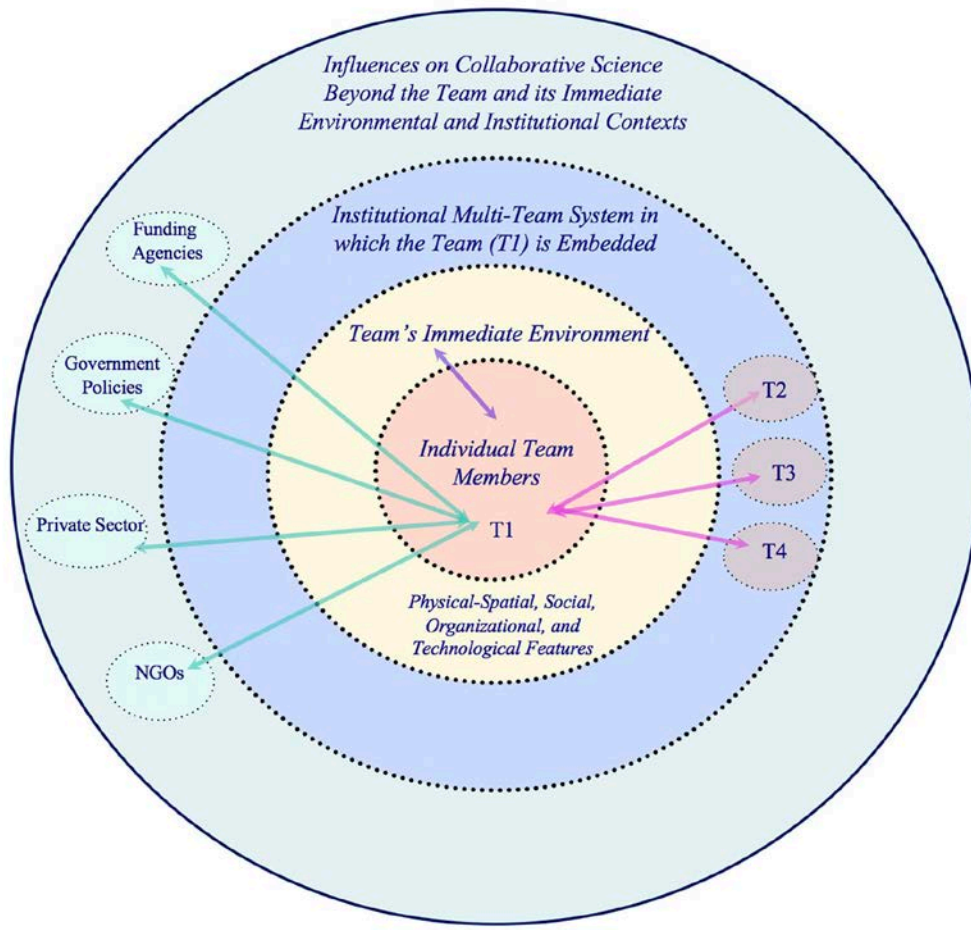
- Sociocultural

- Technological

Changing Conceptions of Convergence

- *Broader cross-disciplinary and trans-epistemic scope, spanning academic fields and sectors beyond academia*

- *Greater emphasis on integrating the concerns and tools of transdisciplinary collaboration and convergence*

- *Explicit consideration of strategies for creating a culture of convergence in research organizations*

- *Closer look at the interplay between divergent and convergent thinking in research teams*

- *Emerging questions about the impact of macro-societal forces on convergence (proximity constraints imposed by Covid-19; cyber chaos; nationalistic, anti-science values and policies)*

Key Facets of the Convergence Ecosystem

Influences on Collaborative Science Beyond the Team and its Immediate Environmental and Institutional Contexts

Institutional Multi-Team System in which the Team (T1) is Embedded

Team's Immediate Environment

Individual Team Members

Physical-Spatial, Social, Organizational, and Technological Features

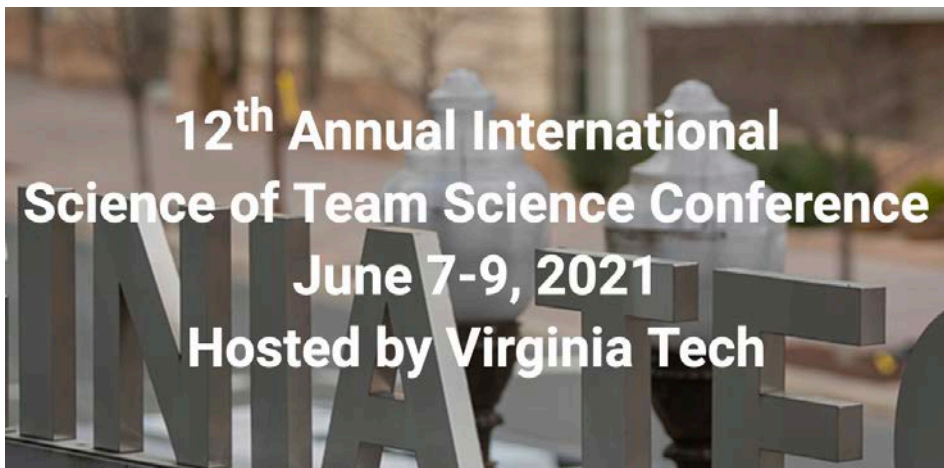Funding Agencies

Government Policies

Private Sector

NGOs

T1 · T2 · T3 · T4

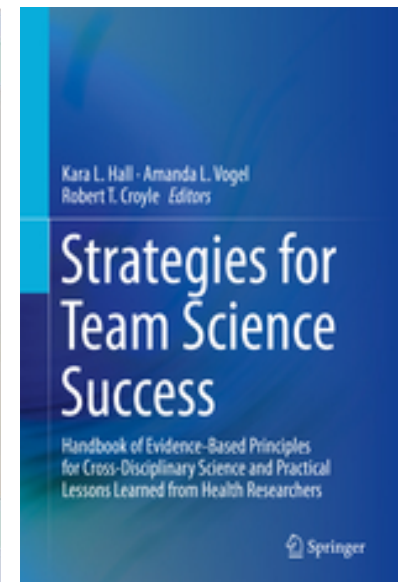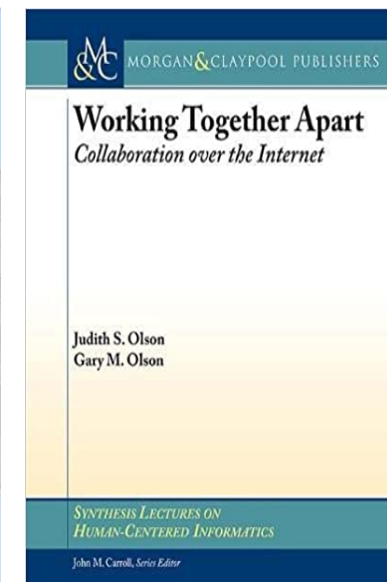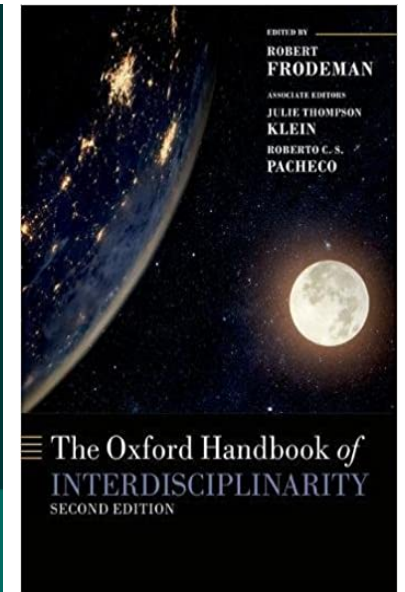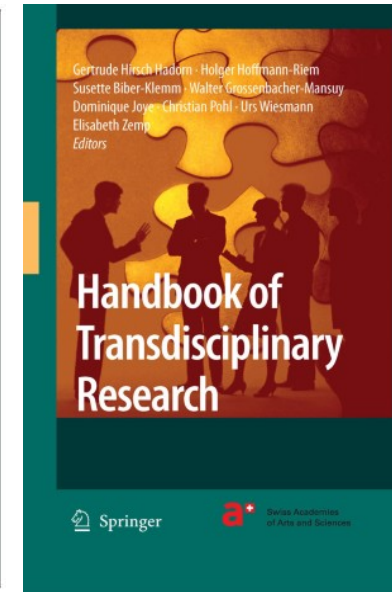*(Stokols, 2019; Stokols, Olson, Salazar, & Olson, 2019)*

- *Societal events; national research policies; funding agency & foundation support for team science initiatives; pandemics, public opinion*

- *Institutional incentives for cross-disciplinary partnerships (e.g., seed grants, credit sharing, promotion and tenure criteria)*

- *Team-level supports (team assembly, collaboration planning; funding, technological and environmental resources)*

- *Cultivating collaborative and integrative competencies- individual and team training strategies*
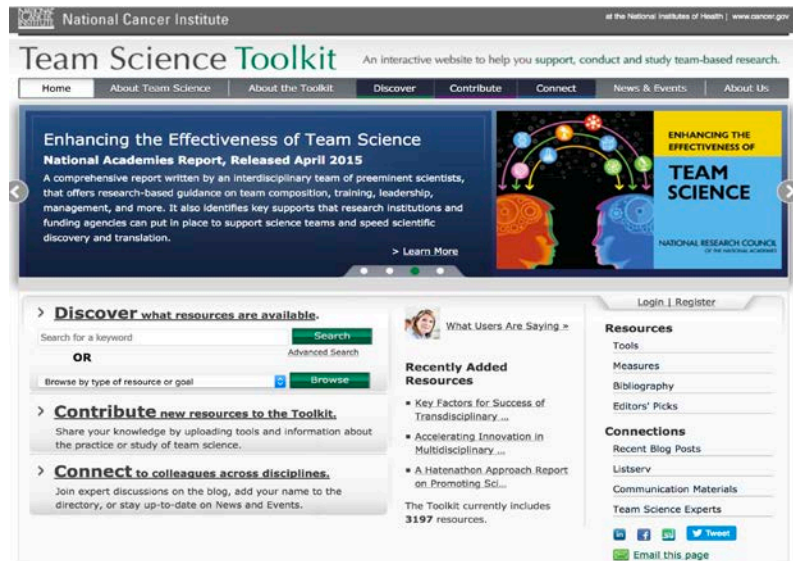
The Science of Team Science

...an interdisciplinary field concerned with understanding and managing circumstances that facilitate or hinder the effectiveness of collaborative (and often cross-disciplinary) research, training, and translational initiatives

https://www.inscits.org/

Resources for Convergence Training and Practice

https://www.teamsciencetoolkit.cancer.gov

https://tsal.uci.edu/

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

http://www.scienceofteamscience.org/scits-a-team-science-resources

http://tdi.msu.edu/
http://tdi.msu.edu/workshops/

https://naturalsciences.ch/co-producing-knowledge-explained/methods/td-net_toolbox

Convergence in the Covid Era

- Fostering Intellectual Synergy

- Promoting Social Integration

Pre-Covid, spatial proximity and environmental supports were considered essential for sustaining intellectual and interpersonal integration in research teams. How will reduced colocation of team members in the Covid era affect the convergent capacity of research teams and centers? What new competencies for convergence research will become imperative in the Covid era?
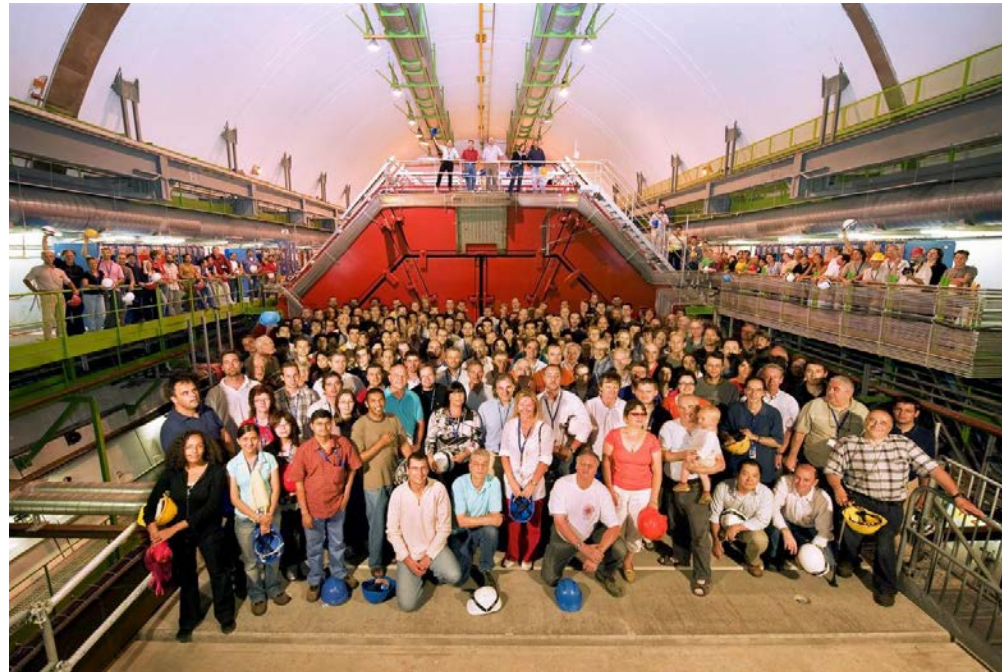

(https://i2insights.org/2019/03/12/idea-tree-brainstorming-tool)

(Kabo, Hwang, Levenstein, & Owen-Smith, 2013; Stokols, 2011)

Cultivating Core Competencies for Convergence

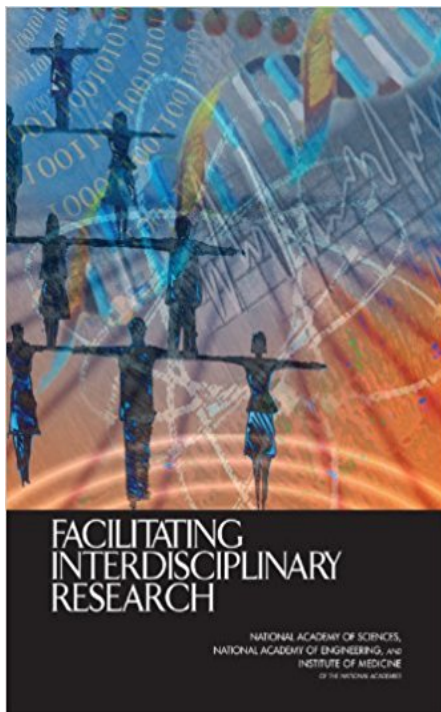*The Four T's of Research Training in the 21st Century*

- *Transdisciplinary*
- *Team-based*
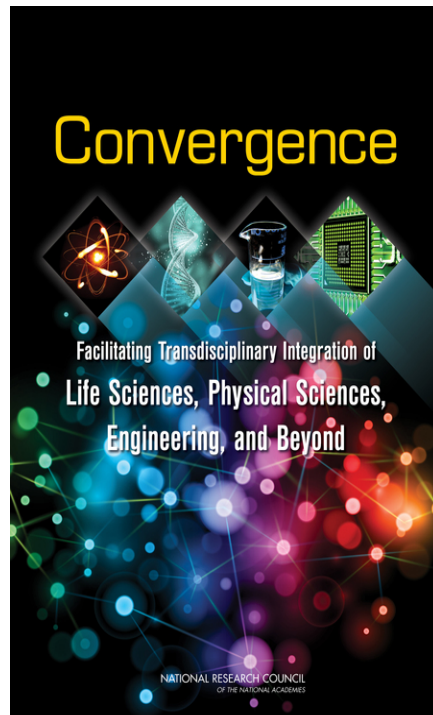- *Translational*
- *Transcultural*

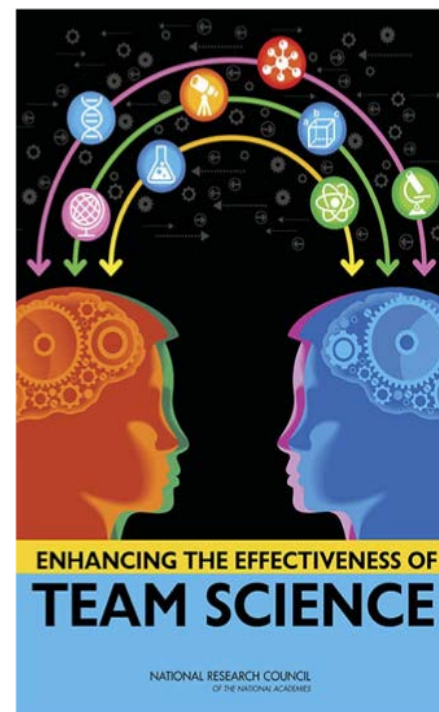*Members of the ALICE Collaboration, A Large Ion Collider Experiment*
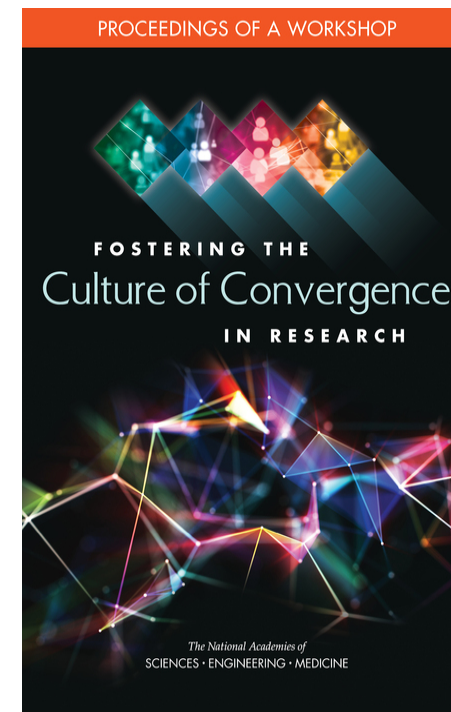
Convergence
Questions for the Future

- *Standardized or context-dependent definitions & criteria of convergence?*

- *Key competencies for co-producing knowledge spanning multiple fields & societal sectors?*

- *Can we transcend spatial, sociocultural, & geo-political constraints on convergence?*

(2005)   (2014)   (2015)   (2019)   (20XX)