Team Science: Creating Successful Teams
Jeni Cross, Ellen Fisher
AGENDA

• INRODUCTIONS
• TEAM EXERCISE
• WHAT MAKES A GOOD TEAM
• SUPPORTING GOOD TEAMS
• EVALUATION OF TEAMS

Biochemistry and molecular biology
Chemical engineering
Sociology
Statistics
Future collaborators:
   Economics
   Business

4 Roles

MOVE: take and action and set a direction
FOLLOW: keep in the direction that has been set
COUNTER: set a NEW direction
OBSERVE: sit back and watch the group dynamics
SOLVING THE PUZZLE

• Take out your name tag and note card and green directions (if you have them)
• Leave the picture in the envelope until it is your time to share
• Your PI is in charge
• Only the PI can answer questions
• Follow the directions on your nametag or card

DEBRIEF
Talk to your neighbor

• Tell about a great team you were on
• Tell about a terrible team you were on
C-Factor (Wooley 2010)

Even turn-taking

Social Sensitivity

Proportion of Women

Practice

Even turn-taking
Practice
Even turn-taking

Sometimes it is my turn to go first
And sometimes it is not.

Google
“Pokeman” Approach
Google Study

Safe to Share Ideas
Being Dependable
Roles and Structure

1. Psychological safety
2. Dependability
3. Roles/Structure
4. Meaning
5. Impact
HOW do we create a great team?

Understanding Points of View
Team Diversity

Facilitation

- Issue resolution
- Strategic visioning
- Action planning
- Multi-stakeholders engagement
- Leadership building
Ground rules

Don't be nasty to each other
Be kind and give support
Don't laugh at what other people say
If all you can say is something unpleasant don't say anything
Membership Change

- Innovation
- Creativity
- Natural Cycle
Creativity and innovation

Analogous reasoning
Organizational & Communication Studies

CONVERGENT THINKING

DIVERGENT THINKING = INNOVATION

Decision Making & Innovation (Kaner 2014)
Deliberative Decision-Making (Kaner 2014)

Making it through Groan Zone

- Facilitation
- Ground rules
- Listening
- Even participation
- FUN
- Analogous reasoning
MIXED METHODS

Observation at team meetings (2/year)
   Even turn taking
   Field notes on team relationships

Interviews

Social Network Analysis
   Surveys: 2015, 2016, 2017
DIFFERENT TYPES OF TEAMS

- Small Teams
- Large Teams
- Team of Teams
- Non-Teams

TEAM CODES

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COLLABORATIVE HISTORY

2015 TEAM A Mentoring

2015 TEAM B Mentoring

CLARITY OF TEAM VISION

2015 Team A Worked Together

2015 Team E Worked Together
TEAM PROGRESSION

2015 Proposal Collaboration

2017 Proposal Collaboration

TEAM INTERRUPTED
TEAM MENTORING

WEAK TEAM F: 2015 Mentoring

STRONG TEAM A: 2015 Mentoring

TEAM REGRESSION

TEAM F: 2015 Mentoring

TEAM F: 2017 Mentoring
TEAM GROWTH & EXPANSION

TEAM A: 2015 Mentoring

TEAM A: 2017 Mentoring

PROPORTION OF WOMEN

2017 Team C Professional Advice

2017 Team D Professional Advice
GENDER IMBALANCED (Team C)

Turn Taking
Percent Above and Below the Median

AFTER COACHING (Team G)

Meeting Turn Taking
Percent Above and Below the Median
DYSFUNCTIONAL TEAM (Team E)

Turn Taking
Percent Above and Below the Median

TEAM DEVELOPMENT
Catalyst for Innovative Partnerships (CIP)

- **Established in 2014 by Vice President for Research**
  - Goal: stimulate new “Multi-X” (multi-disciplinary, multi-million dollar, multi-year, multi-partner) teams and support them to compete for large opportunities or “big bets” in external funding

- **Vision for individual teams**
  - Collaborative: entailing relationship-building, and/or strengthen capacity
  - Inclusive: encouraging liberal arts and creative artistry team members
  - Outward facing: economic development dynamic, emphasizing partnerships in triple helix, public-private partnership manner

What was the initial investment?

- **VPR utilized 1-time funds**
  - ~$800K-1.0M over 2 years
  - Anticipated funding level: 4-5 teams @ ~$200K/each
  - Anticipated ROI: 10X to 100X or $2M to $20M/team

- **Other resources: time, energy and people**
  - VPR Executive Committee
  - Proposal Development Office
  - Research Associate Deans
  - Advancement professionals
Outcomes of 2014 RFP

• 24 proposals submitted
  – 14 selected for open forum presentation

(2nd round: *Pitchfest*)
  – 225 Participants, 177 from CSU
  – Review from
    • RADs, VPAC, open (external) review process at forum
    • Ag Sciences, CNS, CVMBS, CLA, HHS, WCNR, COE, COB
  – 45 Departments or Units represented across all colleges

• New signs of diversification and increased engagement with industry and foundations

First Cohort of CIP Teams: 2015-2017

• 7 Teams were funded
  – VPR successfully lobbied Deans for additional funding (total of ~$1.3M over 2 years)

• Teams:
  – Compatible Polymers Network (CPN)
  – Rural Smart Village Microgrids (SVM)
  – Innovation Center for Sustainable Agriculture (ICSA)
  – Partnership for Air Quality, Climate, and Health (PACH)
  – Fort Collins Urban Resiliency: EcoDistricts and Triple-Helix Community Development (EcoDistricts)
  – Institute for Genome Architecture and Function (IGAF)
  – Coalition for Development and Implementation of Sensor Systems (CDISS)
8 TEAMS: 7 CIP + 1

<table>
<thead>
<tr>
<th>Team</th>
<th>Size</th>
<th>% Women</th>
<th># Colleges</th>
<th>External</th>
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<td>29</td>
<td>5</td>
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- Coalition for Development and Implementation of Sensor Systems (CDISS)
- Compatible Polymers Network (CPN)
- Fort Collins EcoDistricts
- Innovation Center for Sustainable Agriculture (ICSA)
- Institute for Genomic Architecture and Function (IGAF)
- Partnership for Air Quality, Climate, and Health (PACH)
- Smart Village Microgrids (SVM)

CIP Cohort #1

- 174 Faculty & Researchers
- 8 Colleges
- 57 Departments & Centers
- 47 External Partners
- $174M in Proposals Submitted
- $16.9M in Awards Received
- 118 New Pubs
SUCCESS!!!!

...or NOT???

Initial Plan: Professional Development for CIP Teams

- Summer of 2015 – 3 workshops
  - “Team Formation and Effectiveness”
  - “Advanced Grant Writing”
  - “Industry Landscaping”
- Quarterly update meetings with VPR
  - Required reporting – metrics, consistency
  - 1.5 hour presentation time (over 2 days)
  - VPR EC and other interested parties
    - Open to other CIP teams
Great plan…but it kinda didn’t work…

• Team Successes
  – 2 unsuccessful – not really teams
  – 3 “jury still out” – longer term success predicted
  – 2 “successful” – teams with tangible success

• Reporting Inconsistencies

• Early Professional Development from OVPR not on point
  – Needs from OVPR team – cultural shifts for faculty
  – Clearly defined Professional Development (Pre-CIP)

• Quarterly meetings out of sync with academic calendar

• Clear Positive Outcome: Unfettered access to VPR & Team
  – Thoughtful engagement and meaningful feedback

Need More Deliberate Intervention & Coaching

• Assistance with team formation prior to investment
  – Lower risk
  – Higher ROI with CIP program
  – Cultural shifts

- Supporting the creation and establishment of new, interdisciplinary research teams
- Funding: ~$5,000, 9 months

- PRECIP Program

- CIP Program
  - Supporting interdisciplinary research teams as they compete for major funding opportunities
  - Funding: ~$200k, 2 Years

- Established Interdisciplinary Research Network

- Team established as an international leader in addressing a grand societal/scientific challenge
- Recipient of Major External Funding Support
IDR Activities Supported by Pre-CIP

- New research team assembly
- Development of an IDR team structure
- Creation of resources to facilitate large-scale, IDR planning and communication
- Workshops for development of a shared, IDR vision, improvement of ID communication, and/or strengthening team dynamics
- Identification of major funding opportunities
- Generation of preliminary data, creation of joint publications and presentations, whitepapers, or other activities that establish the team as a collaborative entity and solidify its reputation to external audiences
- Identification and recruitment of key partners
- Travel to establish partnerships or meet with program officers
- Preparation of a proposal for participation in the 2017/2018 CIP Program

Team Diversity Measures

- Before Pre-CIP: team makeup from initial Pre-CIP proposals
- CIP-Trained: teams that had significant CIP or Pre-CIP training
- Codes: CIP = applied for 2nd cohort of CIP; Pitch = invited to 2nd round pitchfest

<table>
<thead>
<tr>
<th>Cohort</th>
<th>n</th>
<th>Avg # Members</th>
<th>Avg % Female</th>
<th>Avg # of Depts.</th>
<th>Avg. # Colleges</th>
<th>Avg # Univ/Org</th>
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<td>46.7*</td>
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<td>34.8</td>
<td>5.3</td>
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<td>5.6</td>
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<td>11.4</td>
<td>46.7</td>
<td>7.1</td>
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<td>12.7</td>
<td>49.5</td>
<td>7.8</td>
<td>3.2</td>
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*3 teams ≥75% female
Other Observations about CIP Teams

- Team formation process
  - Most of the teams needed ~6-9 months to “gear up”
  - Many floundered over finding path – “vision”

- Functional gaps
  - Project management
  - Communication

- Additional needs
  - Proposal development
  - Other?

Additional Points of Consideration

- Some “teams” are not (yet) teams
  - Teams who met, who participated in the workshops, and who engaged with our office/team were much more productive than teams who mostly did their own thing and flew under the radar

- Investing time, energy, & (some) $$ on potential teams is valuable
  - A great way to see a number of teams in a “test case” environment, to have those additional data points available for making larger, longer-term investments

- Additional intervention strategies may be needed
  - Utilizing external consultants - Pink & Red teaming, other advice
  - Prospecting – advancement & federal agency relations

- Clearly stated expectations are a must
  - Accountability and consequences
Changes to CIP Program – 2nd Cohort

- Teams will be funded for 2.5 years
  - No $ first 6 months – funding available 1/18-12/19
- Teams will be required to utilize at least 10% of their total budget on project management resources.
- Teams will meet with OVPR 3X/year
  - Told up front to expect high level of involvement
  - Connected to advancement, corporate partnerships, etc.

- Teams will be expected to participate in OVPR research initiatives on understanding the science of successful interdisciplinary research teams

Top 3 Recommendations

1. Spend money on evaluation for the program
   - Include feedback from all stakeholders
   - Be willing to adapt and change program (even mid-stream)
2. Pitch fest – public forums are critical
   - Transparency and open access
   - Q&A to assess team effectiveness and strategy
3. Spend time and effort (and $) on targeted professional development
   - Teams’ developmental stage
   - Designed specifically for teams by people who know about teams & adult learning
QUESTIONS & WRAP UP