Found in Translation: Creating the Optimal Team to Spur Innovation

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Translational Research

Classical Definition

“…effective translation of the new knowledge, mechanisms, and techniques generated by advances in basic science research into new approaches for prevention, diagnosis, and treatment of disease is essential for improving health”

Fontanarosa PB, DeAngelis CD. JAMA 2002;287:1728.
“a mission to create (and disseminate) new knowledge as a sacred social compact”

Clinical Research

Discovery

Novel Methods

Therapeutics

Community Translation

Accelerating Discoveries Toward Better Health
Re-engineering the Clinical and Translational Research Enterprise

Basic Science Discovery → Clinical Research Translation

T1 → T2 → Community Translation Best Practices

Increase research efficiency
Faster adoption of new findings to improved health

Accelerating Discoveries Toward Better Health
A Foundation in Innovation and Team Building Will Help Span the “Valley of Death”
Invention versus Innovation

Invention

• The embodiment of something new
• A discovery or finding
• A product of the imagination
• In patent terms, an invention is something that is:
  – Useful
  – Novel and non-obvious
  – Enabled

In order for an invention to have value, it must be put in a business context (i.e., an innovation)

“\text{I call my invention ‘The Wheel,’ but so far I’ve been unable to attract any venture capital.”}
Innovation and Translation

**Innovation**
- Comprehensive “soup to nuts” approach to organizing and working in a way that maximizes impact, starting with the end in mind

**Translation**
- The goal is to speed the translation of new scientific discoveries to improve health outcomes

**Process**
- Build robust, high performing scientific teams
- Pursue scientific discovery for the sake of enhancing patient outcomes in a way that is scientifically valuable and allows the rapid implementation of findings for the benefit of patients
- Enhance entrepreneurship and commercialization to facilitate adoption of discoveries to enhance health
Realizing Value from Scientific Inventions

• Begin to think of inventions in a business context (conversion to innovations)
  – What is the problem that this invention addresses?
  – Who would benefit from this invention?
  – How many people would benefit?
  – Is this a “need” or a “want”?
  – Would they pay for (or adopt) it?
The Innovation and Entrepreneurial Cycle

- **Discovery, Innovation and Commercialization Cycle**
- **Structure**
  - Organizational Design, Culture, Leadership & Incentives
- **Ideation**
  - Multi-disciplinary collaboration, creativity
- **Attraction of Capital**
  - VC funding, Royalties, Equity & Negotiation
- **Protection**
  - Intellectual Property
- **Invention & Viability**
  - Proof of Concept, Incubation & Tech Transfer
- **Presentation and Publication**
- **Funding, Basic Research**

*Traditional Scientific Domain*
Making Innovation Fundamental
9 steps for driving innovation that delivers value

Creation: innovation facilitation
1. Insights and understandings – focus on end-user drawing on stakeholder research, trends & foresights
2. Identification – strategic considerations, knowing where to play and how to play
3. Ideation – brainstorming, design thinking & processes for development

Capture mechanisms: innovation fostering
4. Incubation – testing, proving concepts & managing idea portfolios
5. Open innovation – pooling specialized knowledge and skills to form valuable collaborations
6. Intellectual property – protecting property rights in ideas

Delivery mechanisms: innovation fulfillment
7. Leadership – leading and fostering growth, culture of innovation
8. Organizational design/architecture - decision rights, performance measures, incentives
9. Capital/Funding – value realization proposition that provides access to capital/funding
Defining Innovation: The Red Thread of Consistency in Translational Science

Corporate Innovation – the practice of value creation to drive top-line growth through the development of new products, services, processes and business models.

Or for translational science—Discovery based change that improves peoples lives.

By creating, capturing and delivering new value that meets articulated and unarticulated needs, wants and demands of the end-consumer (patient).

Through a portfolio of scientific discovery and translational research that is anticipatory of stakeholder, cultural, and technological trends.
What Problems Lend Themselves to Innovation Best Addressed by Team Science?

• Ill-defined problems
• Multiple stakeholders with vested interests
• Disparity of power or resources among stakeholders
• Different levels of expertise/access to needed information
• Complex problems and/or scientific uncertainty
• Differing perspectives on a problem
• Unsuccessful unilateral efforts
• Existing processes are insufficient to address problems

Reasons to Collaborate

- Access to expertise or particular skills
- Access to equipment or resources
- Cross-fertilization across disciplines
- Improved access to funding
- Learning tacit knowledge about a technique
- Obtaining prestige, visibility or recognition
- Enhancing trainee education
What is a Scientific Research Team?

.....think of it as a continuum.....

<table>
<thead>
<tr>
<th>Investigator-initiated research</th>
<th>Research Collaboration</th>
<th>Integrated Research Team</th>
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<tbody>
<tr>
<td>Investigator works on a scientific problem – largely on his or her own.</td>
<td>Group works on a scientific problem, each bringing some expertise to the problem.</td>
<td>Team works on a research problem with each member bringing specific expertise to the table.</td>
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<td></td>
<td>Each member works on a separate part, which are integrated at the end.</td>
<td>There are regular meetings and discussions of the team’s overall goals, objectives of the individuals on the team, data sharing, and next steps.</td>
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<td>The interaction of the lead investigators varies from limited to frequent with regard to data sharing or brainstorming.</td>
<td>One person takes the lead while other members have key leadership roles in achieving the goal.</td>
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Establishment of Research Teams

- High performance teams have three components
  - Prerequisite technical skills
  - Complementary people skills
  - Passion
- Successful research teams can be initiated both from the top down and from the bottom up
  - Support from the top is critical for team success
Collaboration (and Team Science) Introduces Threats

Group-Identity

Self-Identity

High Interaction and Integration

Multiple Interdependent Leaders

Independent

Interdependent

Status

Power

Autonomy
Model of Team Development

Tuckman, 1965, 1977

Forming

Storming

Norming

Performing

Adjourning and Transforming

Tuckman, 1965, 1977
Stages of Team Development: Forming

**Characteristics**
- Polite stage
- Team members introduced
- Positive interaction initial meetings
- Project, roles and responsibilities introduced
- No one offended yet

**Approach**
- Build common purpose
- Understand expectations
- Clarify accountability
- Assess resources
- Leader-provides direction
Stages of Team Development: Storming

Characteristics
- Honeymoon over
- Project work and technical decisions
- Control clashes
- Quality improvement resistance
- Attitude fluctuations
- Defensiveness
- Disunity

Approach
- Involve everyone in decisions
- Seek group opinions
- Clarify purpose and approach
- Test resources
- Leader-raises difficult issues
Stages of Team Development: Norming

**Characteristics**
- Constructive criticism
- Collaboration
- Membership acceptance
- Team cohesion
- Ground rules and boundaries to work the plan
- Trust developed

**Approach**
- Develop information sharing
- Forums on tasks-relationships
- Build feedback loops
- Consensus and negotiation
- Leader-facilitates others to lead
Stages of Team Development: *Performing*

**Characteristics**
- Working the plan
- “Safe to Say” culture firmly in place
- Team members make contributions
- Results motivated
- Tasks accomplished effectively and efficiently

**Approach**
- Continuous improvement
- Evaluate results against purpose
- Celebrate success
- Leader-focuses on purpose and interdependent relationships
Building and Sustaining Teamwork: Clarify

• A meaningful purpose and desired objectives
  – Why does this team exist?
  – What does success look like?
  – Approach
    • Initially group collaboration
    • Followed by leadership defining the team’s purpose
• Expected behaviors
  – Accountability
Building and Sustaining Teamwork: *Communicate*

- Respect-360 degrees
- Understand what makes the other team members feel important
- Totally listen
- Close the loop
- Patience and calmness
- Be in the moment at a moment’s notice
- Walk a day in the other person’s shoes
- Care about the other person’s success
Building and Sustaining Teamwork: *Trust, Ownership and Empowerment*

- Ensure all team members “buy-in” to project or mission
- Initial face-to-face meetings help build trust and respect
- Open & honest communications necessary to instill “transparency” for leader and team members
- Leader cannot micromanage team members
- Must empower them with clear “charter”
- Help remove barriers as they occur
- Regular one-on-one meetings for status & help
- Create a sense of “shared destiny” within the team
Optimizing Conditions for Innovation

- Focus: Define the parameters you will innovate within
- Develop an improvement mindset
- Insights are gained from interactions
- Practice in a deliberate manner
- Avoid futility of avoiding failure
- Increase a sense of urgency
- Be willing to stop and start over
- Nurture passion

Coughlin. *The Business Leader’s Impact*
Accelerate and Sustain Excellence

• Be ready for opportunity
• Learn from others
• Perform with precision
• Have fun
• Pursue excellence through design thinking
Thomas Edison: A Design Thinker

**Design Thinking**
Methodology imbues the full spectrum of innovation activities with an understanding of what people want and need.

**Edison’s Approach**
Team-based
Multidisciplinary
Good business sense
Nimble budget
Full product launch — light bulb, electric power system, etc.


*“Hell, there are no rules here — we’re trying to accomplish something.”*  
Thomas Edison
Design Thinkers: Personality Profiles

**Empathy**

Look at work from multiple perspectives (colleagues, clients, end users, and customers)

**Integrative thinking**

See salient and contradictory aspects of problem and find novel solutions

**Optimism**

Assume that at least one potential solution is better than the existing alternatives

**Experimentalism**

Pose questions and explore constraints in creative ways that proceed in entirely new directions

**Collaboration**

Have significant experience in more than one discipline (engineers & marketers; anthropologists & industrial designers; architects & psychologists)
Innovation and Team Science

“Coming together is a beginning.
Keeping together is progress.
Working together is success.”

Henry Ford
In team science, working together, we can do something great!