Building Successful Interdisciplinary Research Teams

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What are research teams?

- Groups of expert researchers using various methodologies to study a defined, complex health question or issue in a collaborative fashion.
- The combination of their unique approaches, observations and discoveries is intended to potentially impact health through an integrated understanding of the issue.

Major health issues requiring a team research approach

- Low birth weight / preterm birth
- Mental health and addictions
- Aggression and anger
- Cancer
- Diabetes
- Obesity
- Ischemic heart disease
- And many others

Incentives to forming teams

- As a smart, talented, rich and powerful faculty member, you have a strong sense of your independence; your success is usually dependent on your own achievements – so why would you want to become part of a team?
- Because there's a need for integration (combining various parts or elements into a more harmonious, effective and productive unit);
- Because you recognize that the whole is greater than the sum of the parts;

Incentives to forming teams -2

- Because you like to perform some tasks more easily and take advantage of opportunities to create value;
- Because in research, integration means it is more likely that innovative studies will occur when disciplinary or methodological boundaries are crossed; and
- Because more will be accomplished than if individual research stars tackle problems only in their disciplines with little contact with one another.

Barriers to forming research teams

- Non-traditional way of working
- Cultural and “language” differences between disciplines or methodologies; lack of understanding of value of other disciplines
- Reward systems in academia favor the individual, not the team
- Lack of leadership; no training of leaders
- Long time required for team to gel; difficulty of obtaining start-up and/or sustained funding

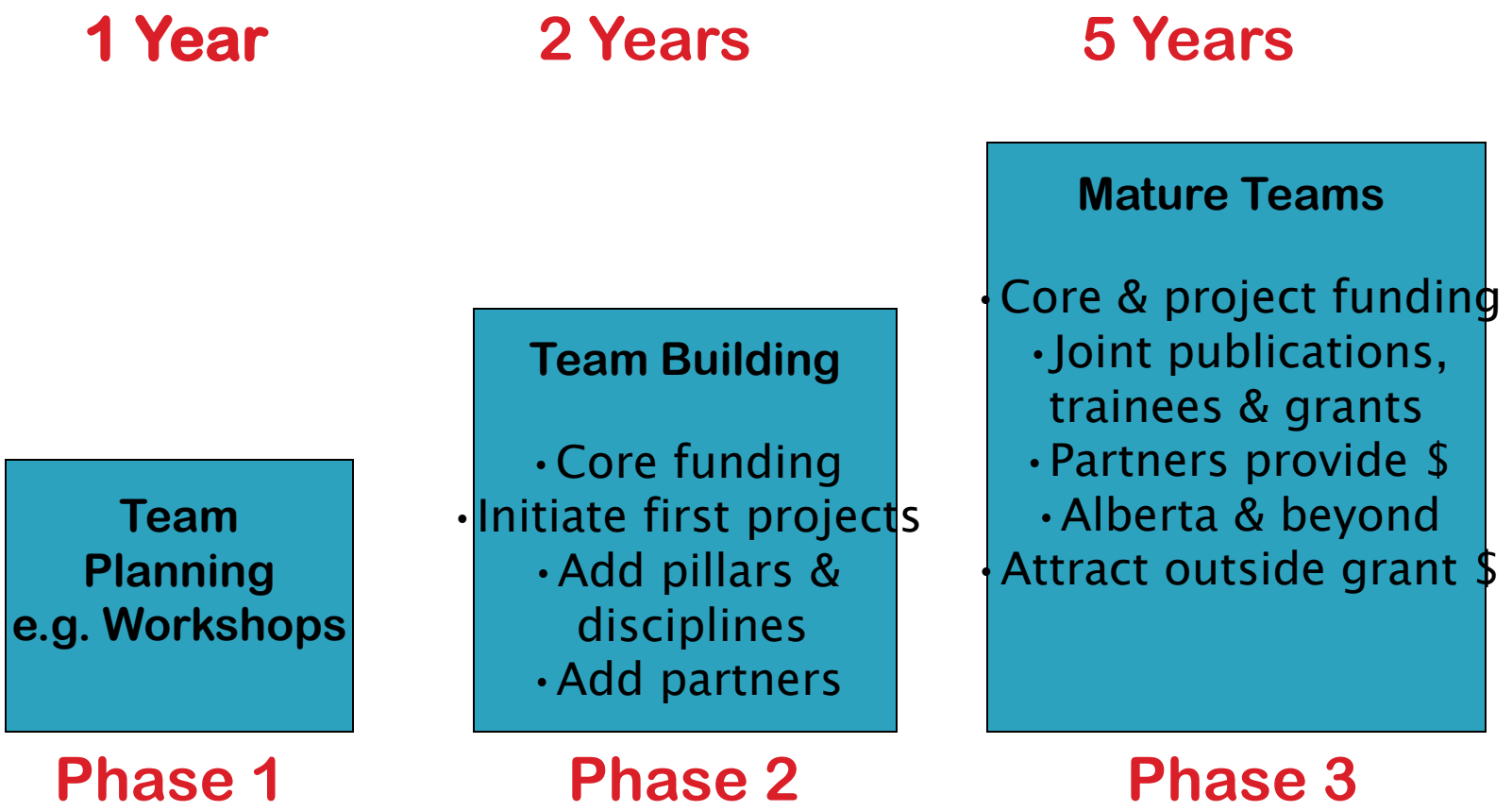
Barriers to forming teams – 2

- Lack of integration can lead to friction that impedes the goals of the team and the goals of the individual stars on the team
  - No perceived common interests
  - Lack of a felt shared history
  - Too much bad history
  - Poor internal communication
  - Cultural differences
  - Spoilers
  - Divide-and-conquer leadership

Overcoming barriers to integration

- Make common interests apparent through meaningful activity
- Make history together
- Bridge the cultural divide
- Become a communications engineer
- Co-opt or isolate spoilers
- Adopt a unite-and-lead style of management

Team Development



Mature Team

COACHING COMMITTEE
Business plan
Milestones
Frequent meetings

MATCHING SUPPORT

Gov't of Alberta
Business/Industry
Communities
Federal Gov't
Int'l Consortia

TEAM MAKE-UP

- Major health issue for Albertans
- Broad platform technologies
- Minimum 3 universities & AHS
- Intervention projects
  - 3-4 pillars
  - Interdisciplinary
  - Pan-Albertan
  - Global connections

MATCHING SUPPORT

Research Centres
& Institutes
Funding Agencies

CORE SUPPORT
AIHS
Alberta Universities
Alberta Health Services

Examples of IntD ResearchTeams

- Your examples

How to get started -1

- Incentives
  - Top down/bottom up
  - $ money
  - Health need
  - Opportunity

How to get started -2

- Creating relationships
  - Taking risks
  - Developing trust
  - Building credibility
  - Negotiating boundaries
  - Assigning responsibilities

How to get started -3

- Minimum requirements
  - An idea
  - Two investigators with complementary approaches
  - Resources

How to get started – 4

- Champions or Leaders
  - Not always easy to find
  - University ‘rewards’ systems favor the individual, not the team or team leader
    - Reward systems need to be adjusted
  - Timeframe long-term; a barrier
  - Incentives for research leadership required
  - Research leadership training courses required

How to get started – 5

- Forming Partnerships
  - Governments at all levels
  - Community organizations
  - International consortia
  - Research centres and institutes
  - Foundations
  - Funding agencies (e.g. CIHR, Institutes, NIH)
  - Industry or Business

How to get started – 6

- Partners can:
  - Provide matching funding or other support beyond core support
  - Encourage team development to support their priorities
  - Demonstrate project alignment with provincial priorities or national and international priorities

How to get started – 7

- Team Values
  - Define your own team values and document;
  - Work on these each time you meet

Team Success

- How would you define success of your team?
  - Obtaining support
  - Staying together for a period of time
  - Growing
  - Attracting and training research students
  - Products of research
  - Informing practice or policy

- Review these each time your team meets

Time commitment

- Individual
  - Just like a regular research project (grant writing, research, training, KT)
  - Plus face time with other team members
  - Plus integration, team activities, making it work
- Team leader(s)
  - Do all the above for the individual
  - Then do it for the whole team
  - Plus all the group issues (e.g. KT, training, IP, etc.)
  - Integrate, integrate again and integrate some more
- Rule of thumb – estimate time required, then triple it

Our team – The AHFMR Interdisciplinary Preterm Birth and Healthy Outcomes Team (PreHOT)

Team Makeup

- Team comprises 20 investigators across 13 disciplines

University of Alberta

University of Lethbridge

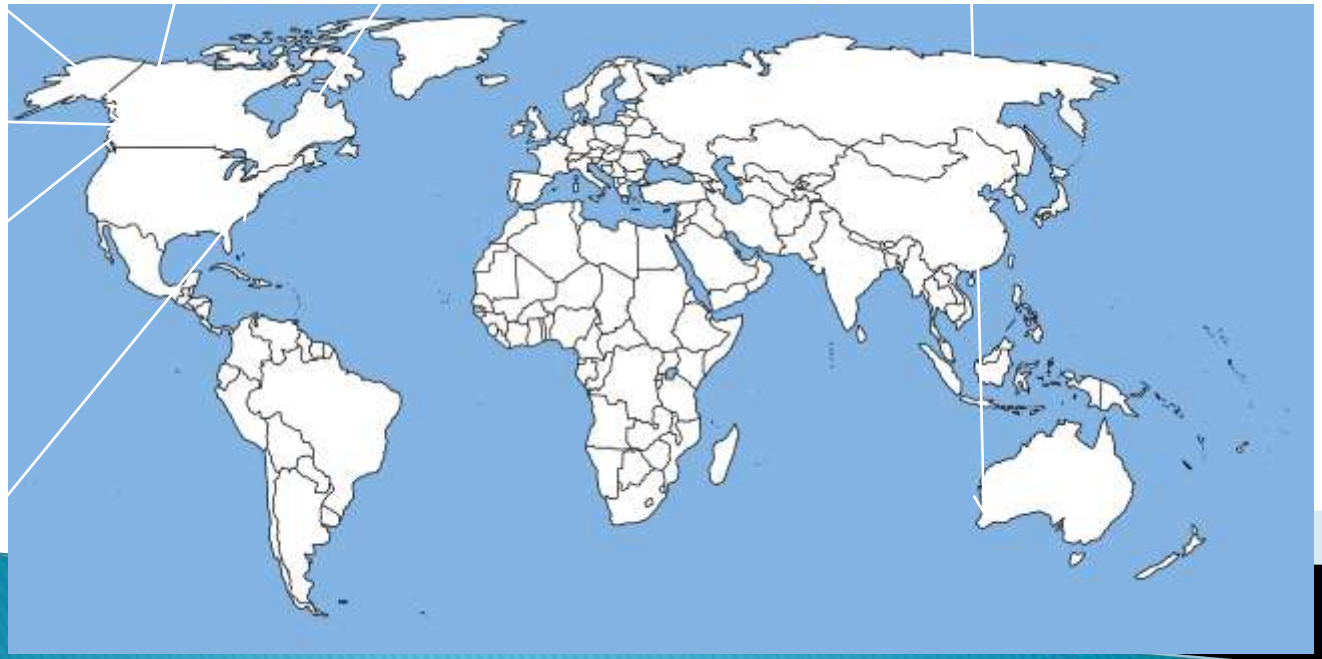
University of Toronto

University of Western Australia

University of Calgary

Calgary Laboratory Services

Albert Einstein College of Medicine

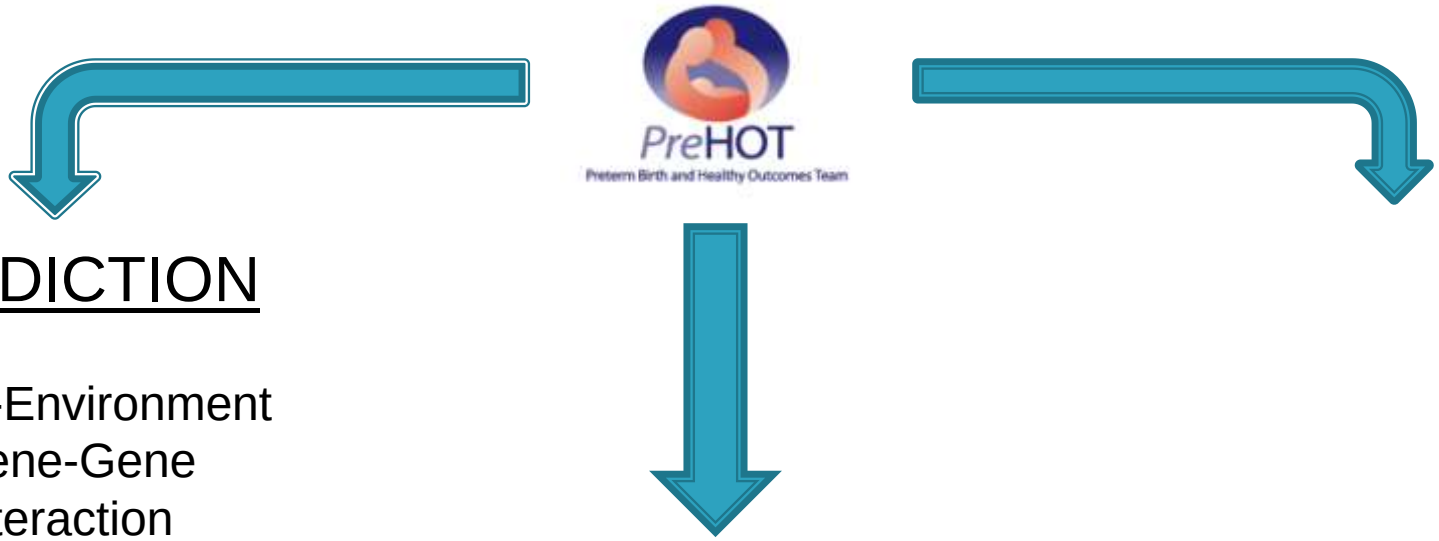


PreHOT
Preterm Birth and Healthy Outcomes Team

Alberta Innovates Health Solutions

AHFMR

Program Overview



PREDICTION

- Gene-Environment
- Gene-Gene interaction
- Gene expression

Program Overview

PREDICTION

- Gene-Environment
- Gene-Gene interaction
- Gene expression

PREVENTION

- Infant Birth Outcomes
- Maternal Health Care
- Parenting Support
- Develop Animal Models *& In Vitro* Laboratory Models

Program Overview

PREDICTION

- Gene-Environment
- Gene expression
- 'Omics research

INTERVENTION

- Fathers & Babies
- NICU Environment
- Economic Analysis

PREVENTION

- Infant Birth Outcomes
- Maternal Health Care
- Parenting Support
- Develop Animal Models *& In Vitro* Laboratory Models

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Preterm Birth and Healthy Outcomes Team

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Leadership

Dr. Suzanne Tough
Professor & Co-director
Department of Paediatrics &
Community Health Science
University of Calgary

Dr. David Olson
Professor & Co-director
Departments of Obstetrics & Gynaecology,
Physiology & Paediatrics
University of Alberta

Governance

- Leadership
- Roles & Responsibilities
- Audit
- Reporting

Figure 2. Organizational Structure of PreHOT Team

PreHOT
Preterm Birth and Healthy Outcomes Team

Alberta Innovates Health Solutions

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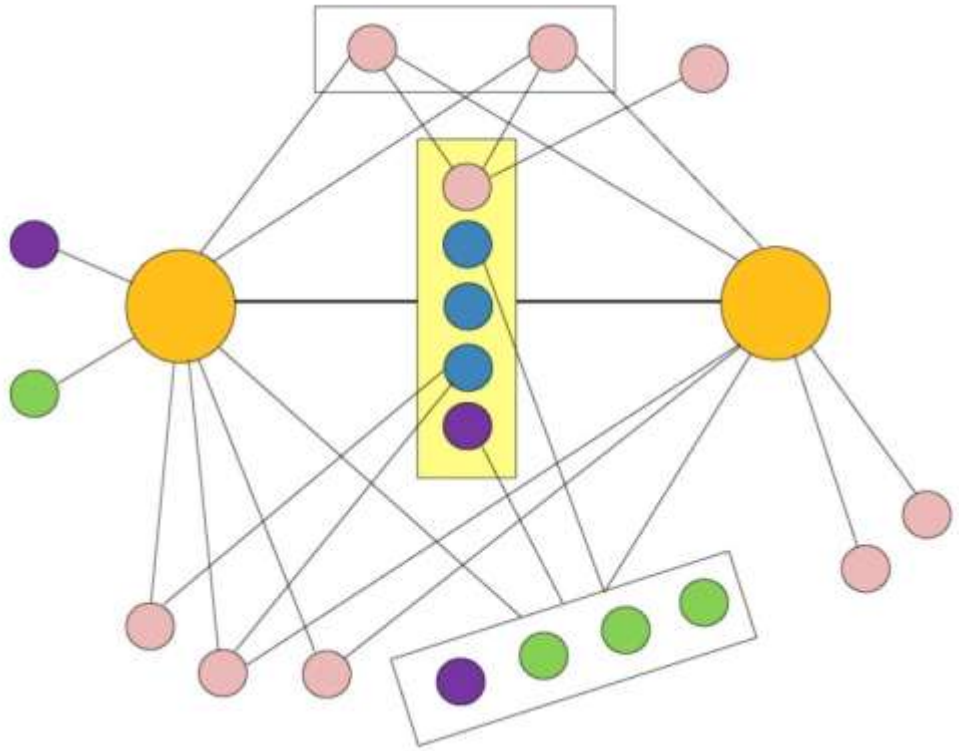
Governance

- Roles and Responsibilities
  - benchmarks
  - monitor
  - report
- Improve interdisciplinarity



- Core
- Theme 1
- Theme 2
- Theme 3
- Co-Directors

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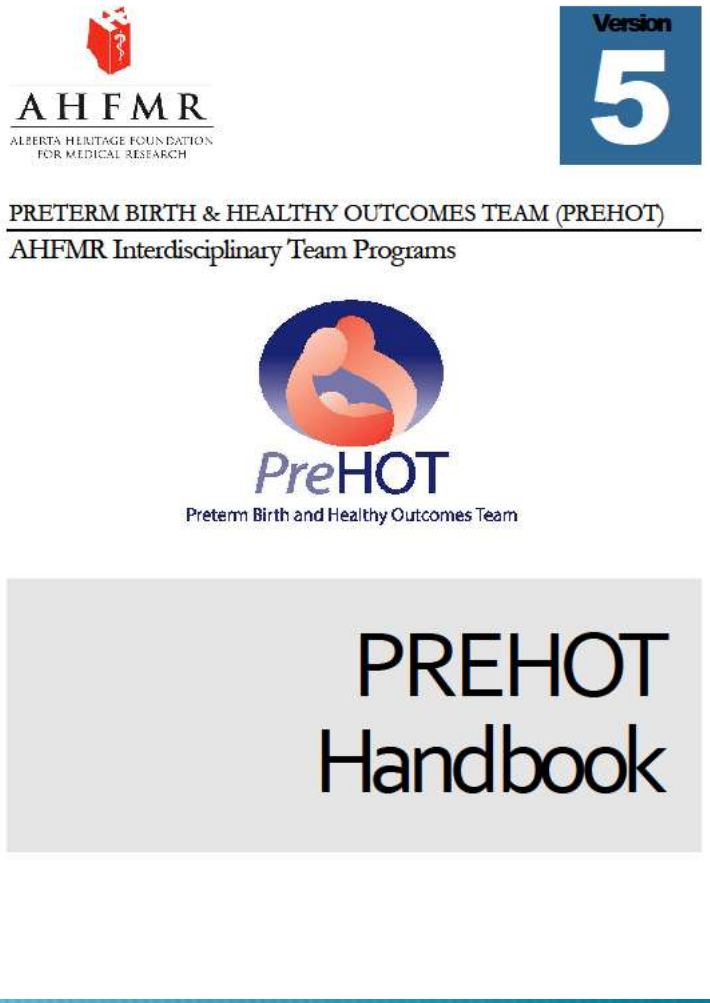
Governance

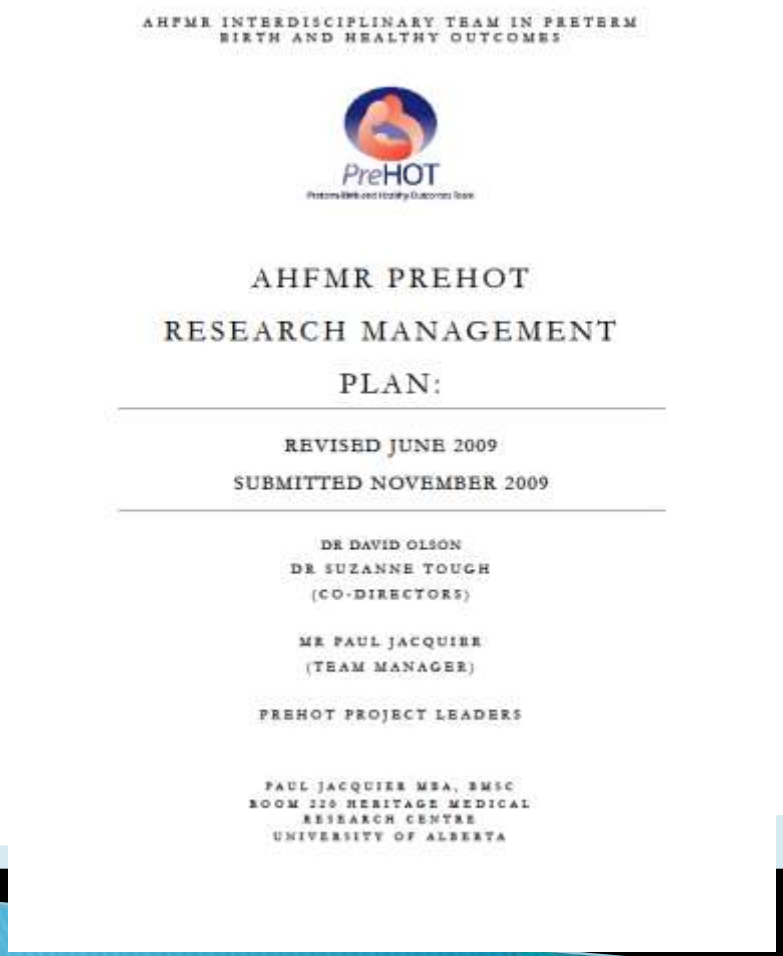
Administration

- Team Policies & Procedures



Project Management

- Stakeholder terms and conditions
- Project planning & tracking
  - Defined period
  - Defined funding
- Research Management Plan



AHFMR INTERDISCIPLINARY TEAM IN PRETERM BIRTH AND HEALTHY OUTCOMES

PreHOT

AHFMR PREHOT

RESEARCH MANAGEMENT

PLAN:

REVISED JUNE 2009

SUBMITTED NOVEMBER 2009

DR DAVID OLSON
DR SUZANNE TOUGH
(CO-DIRECTORS)

MR PAUL JACQUIER
(TEAM MANAGER)

PREHOT PROJECT LEADERS

PAUL JACQUIER MBA, BMSC
ROOM 220 HERITAGE MEDICAL
RESEARCH CENTRE
UNIVERSITY OF ALBERTA

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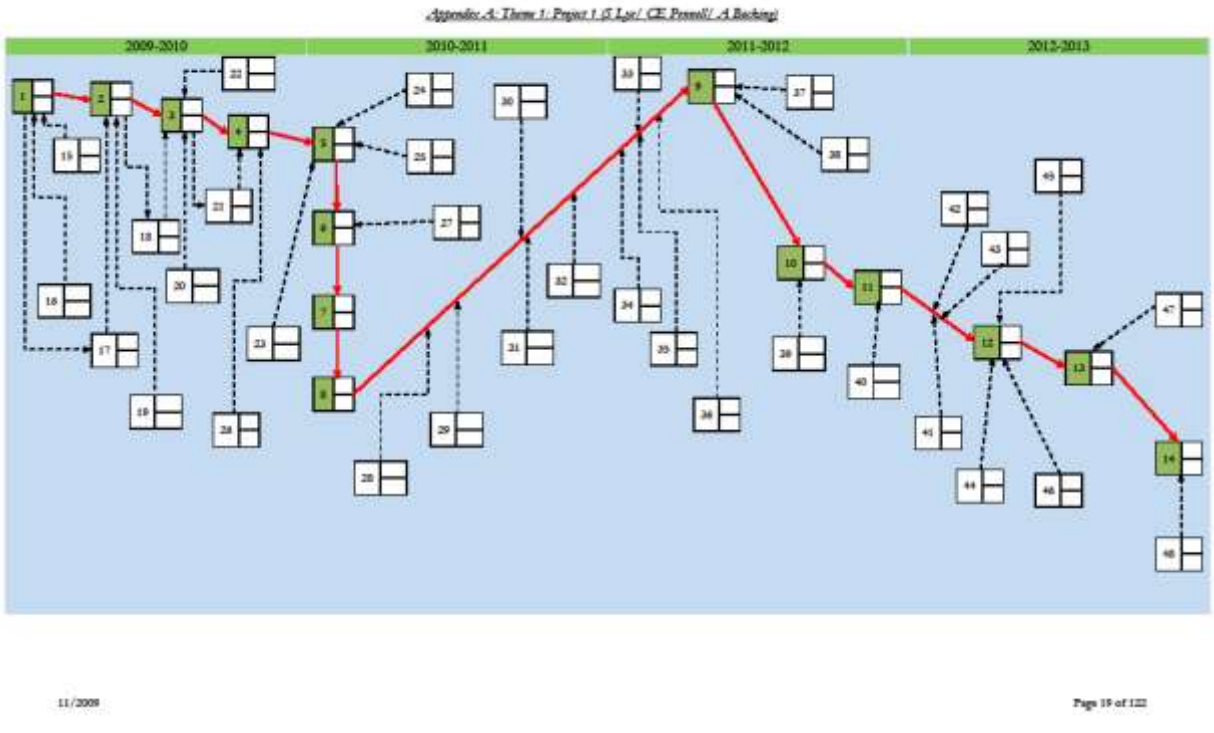
Project Management

- Research Management Plan
  - Critical Path Analysis
    - Gantt chart
    - WBS



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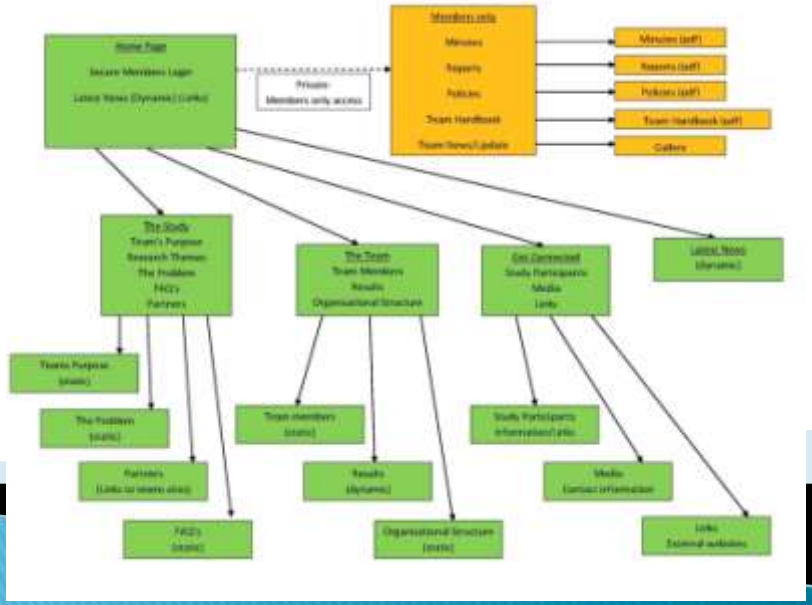
Communication

Website: www.prehot.org

- Design
- Facilitate communications
  - time zones
- Information
  - Team
  - News
  - Studies
  - Contact



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Communcation

Online Technology

- Webinars (Adobe Connect Pro)
- Skype

- Team Updates and News
- Team Training
- Meetings
- Committees

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Communcation

Meetings

- Manage and Coordinate
- Business Meeting
- Reporting
- Business Agenda
- Program

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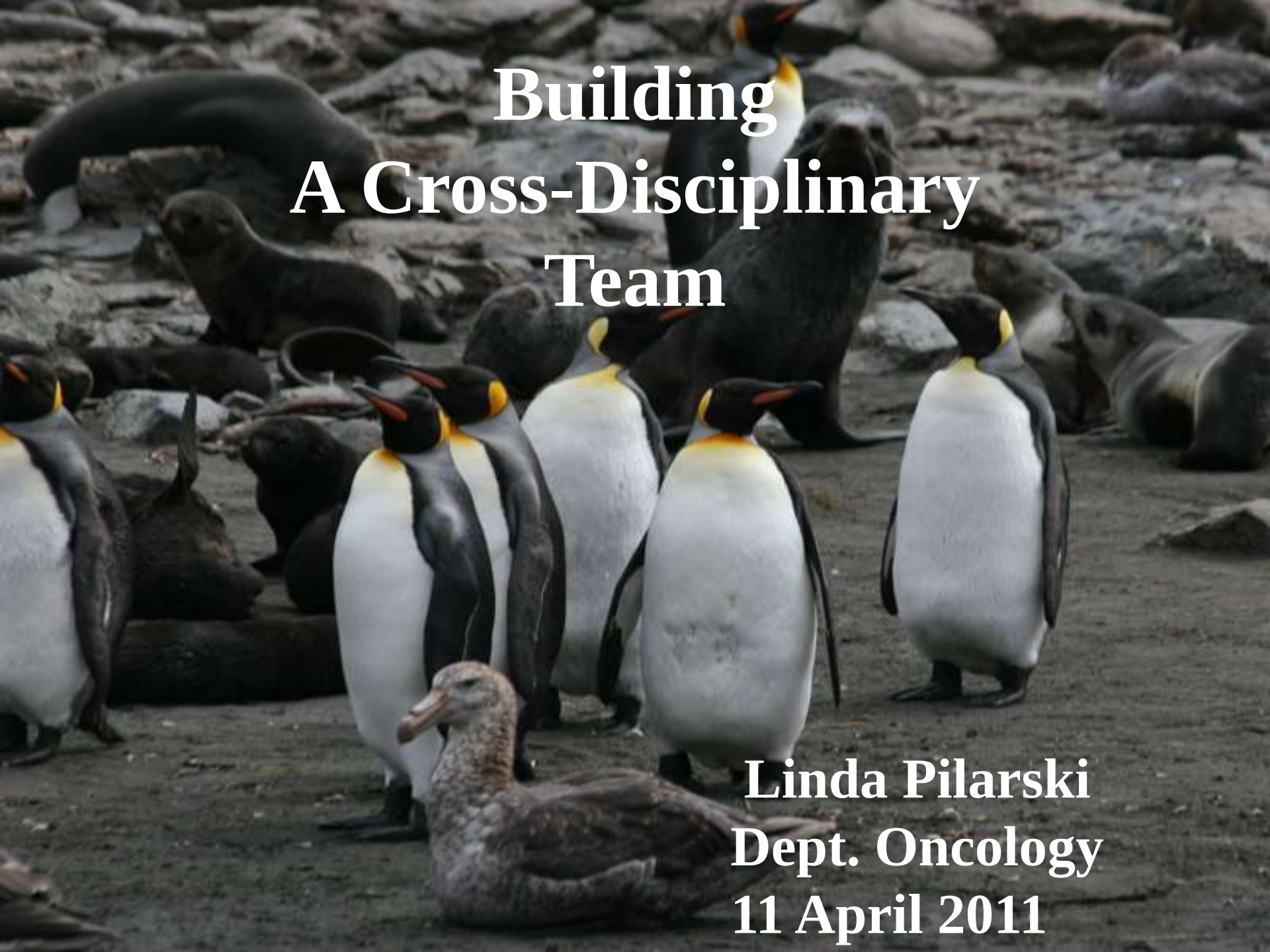
Finally . . .

- Have fun
  - If you have to work too hard, if you don't feel successful or you're not making a difference

. . . . Move on!



Building A Cross-Disciplinary Team

Linda Pilarski
Dept. Oncology
11 April 2011

Stages of Team Development

- **Forming - depends heavily on team leader: leader directs**
- **Storming - figure out relationships and goals: leader as coach**

- **Norming - establishing work patterns and common goals: team members take responsibilities, leader facilitates and enables**
- **Performing - team becomes strategic and knows where it is heading, leader delegates and oversees**

(Tuckman Model, 1965)

The Team

1) Highly cross-disciplinary

- Biomedical Scientists
- Engineers
- Medical Doctors
- Social scientists
- Ethics and Law

2) $5 million in funding from AHFMR (AIHS)

3) Multiple institutions

4) Links universities and private sector

5) Now located in Dentistry Pharmacy Bldg

Forming: Building the Team

- Start with passionately committed core and strong leadership

- Can require a long, persistent search for funding

- Building works only when the project is central for everyone

- The projects of team members must be closely linked: If too far apart, teams turn into silos with few functional links between them

- Team PIs need to have common goals and a solid respect for each other's contributions

- Major disconnects at beginning may become worse as team matures
- Sharing goals means that if a project later fails and needs to be terminated, this can be accomplished without major battles
- Fundamental founding premise should be to insist on integration that avoids silos

To obtain team funding:

- **Some team members should have an existing collaboration**

- **Leader should be a fairly senior PI with experience leading a team, and a strong research record**
- **Joint publications and/or IP important for team credibility in a grant competition**
- **Re-allocating existing funds to initiate joint work is well worth the risk**
- **All of the above demonstrate commitment to team building**
- **Private sector involvement helps- shows potential, and intent, to reach the patients and the community**

Storming: Team Communication

Integrating the team:

- **not an easy process**
- **requires constant communication**
- **face to face works best**
- **develop a common language**

Path to success required biomedical and engineering trainees to work in close proximity

- Regular group meetings attended by as many of disciplines as possible
- Detailed discussions of problems, challenges and successes so everyone is involved in all projects
- inter-city or cross country teams are challenging

- Face to face communication on a daily basis is critical
- Develop IP policy upfront, easiest to require assignment of inventions to U of A

Norming: Working Together

Need clearly defined end goal and focused efforts.

Need to incorporate strengths of the whole team.

- **Compatible approaches**
- **Chose directions that best achieve the agreed common goal**
- **Members must share vision and accept “critical path”**

- Need to work together even in early developmental stages

Temptation is to say "I'll make it perfect and then you can use it". This can fragment and compromise a team

The problem is that "perfect" for one PI can be considerably less than perfect for others - there are too many alternate definitions of "perfect"

Details Matter

- Small group meetings are best.
- Difficult to solve problems with generalities.
- Need in depth discussion of details. Multiple team perspectives help to identify problems and trouble shoot.
- Careful selection of visionary team members. “Need the right people on the bus!”
- Participation of a project manager is extremely helpful for keeping projects together and on track

Performing: What We Have Learned

- Learn from successes and failures to build productivity.

- Sustaining enthusiasm is fundamental.

- Communicate details: Understand what worked and why. Can change whole approach.

- Ongoing expansion based on accomplishments. Avoids solving the same problems over again.

Critical to identify when to alter directions or focus on alternate approaches

- Team funding often requires regular updates on progress and milestones.
  This can be quite valuable and informative
  - Need to monitor ability to meet "deliverables"
  - Team management committee needs to regularly discuss directions/progress

May help to have a central budget rather than separate operating accounts:
Facilitates team control of research directions

Take Home Message

1) If it really matters, collectively and individually refuse to take "No" for an answer.

2) Persistence may not be popular but it is essential for achieving success and surviving failure.

3) Ensure credit is fairly shared and acknowledged for all team members

4) Innovation needs bold vision that incorporates realistic appreciation of critical details

Funded by:
AHFMR Interdisciplinary Team Grants Program
Canada Research Chairs Program