Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

Canada

Strategies in Scientific Collaboration

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What is collaboration?

Collaboration

- Thought process follows similar road maps.
- With 7.5 billion people on earth there is no such thing as a novel idea!
- Difference is between those that find the resources and establish the collaborations required to turn these ideas into reality *vs*. those that can not.

What is collaboration?

- Working with others to do a task and to achieve shared goals by sharing knowledge, learning and building consensus.
- Most collaboration requires leadership.
- Teams that work collaboratively can obtain greater resources, recognition and reward when facing competition for finite resources.

Cooperation *vs.* Collaboration

- Partners using a **cooperative** strategy to work together to meet their individual goals.
- Partners using a **collaborative** strategy establish common goals and agree to their personal and institutional power to achieve them.

What is collaboration?

What does collaboration need to succeed?

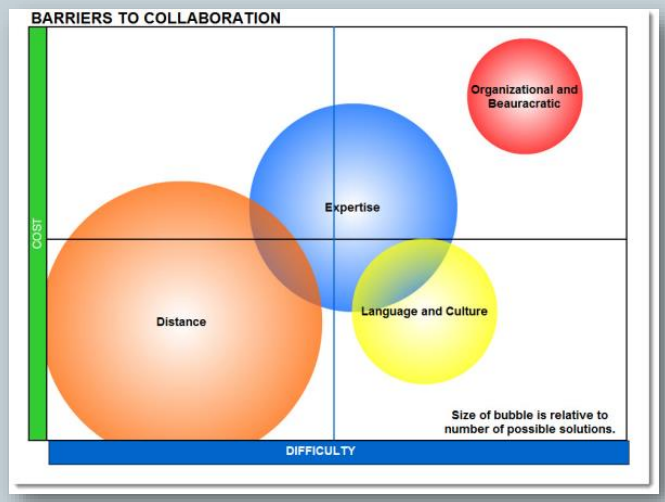
What does collaboration need to succeed?

1. Team focused
2. Generous
3. Curious
4. Appreciative
5. Listens to understand
6. Seeks to find and answer the bigger questions
7. Connects the dots or creates the dots
8. Gives and expects trust
9. Builds relationships; breaks down walls
10. Diplomatic

Common Barriers to Collaboration

1. A lack of respect and trust
2. Different mindsets
3. Poor listening skills
4. Knowledge deficits
5. A lack of alignment around goals
6. Internal competitiveness
7. Information hoarding
8. Organizational silos
9. Physical separation
10. Arguments over intellectual property
11. No resources

Common Barriers to Collaboration



Benefits of Collaboration

- Effective Outcomes
  - Collaboration frequently results in innovative projects and policies that extend across traditional jurisdictions.
- New Perspectives
  - Conventional decision-making can bring about change through new rules and policies, but only collaboration can truly shift peoples' underlying attitudes.
- Mutual Learning
  - Collaboration allows participants to learn from one another and work toward a deeper understanding of important issues and constraints.

Benefits of Collaboration

- New Networks
  - Collaboration builds "social capital" by increasing trust, often leading to the creation of new organizations for sharing information and undertaking collective projects.
- A Sense of Shared Ownership
  - Problem-solving power is shared in a collaborative process, and this often translates into a sense of shared responsibility for the land.
- Reduced Conflict
  - Meaningful involvement can ultimately lead to less disagreements in the future.

How to start a collaboration

1. Cultivate a shared vision right from the start… Even if it's vague.
2. Carefully recruit the right mix to reach your stakeholders and decision-makers.
3. Pay close attention to:
   - Sustaining momentum
   - Engaging perspectives and addressing the process and needs of each individual partner.
4. Ensure that each partner's individual and institutional self-interests are served by both the process and results of the collaboration.
5. Don't waste time. Meetings must be efficient and productive; management must be lean and driven. Remember: for many this is often a second priority.

How to start a collaboration

6. Keep in touch. Make the collaboration a regular event.
   - Develop clear roles and responsibilities for participants (even if these roles and responsibilities regularly shift among partners).
   - Recognise that it is easier and better received to cancel a meeting or remove a responsibility than it is to add a meeting or responsibility to participants' lives.
   - Get commitment from all participants to ensure full engagement each time you meet – time wasters stifle creativity, productivity and commitment.
7. All collaboration is personal. "inter-institutional collaboration" is a common misnomer. Effective collaboration happens between people – one person to another.

Collaboration over time: Network 1986 - 1996

Collaboration over time: Network 1986 - 2006

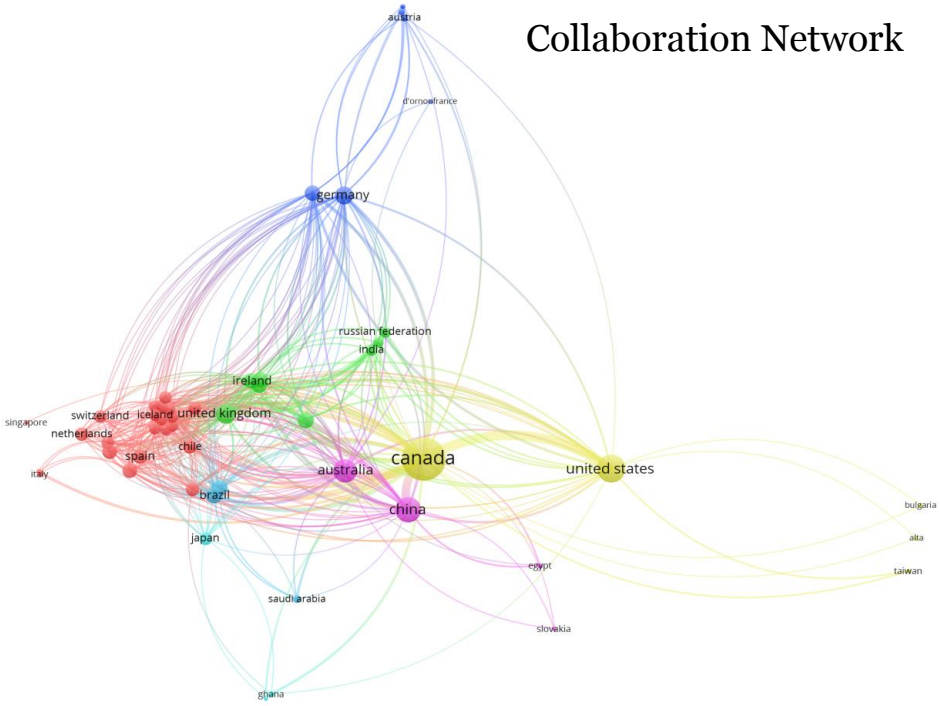
Collaboration over time: Network 1986 - 2017

Citations: 1986 - 1996

Citations 1986 - 2006

Citations 1986 - 2017

Collaboration Network



New opportunities

- Graduate student and Visiting Scientists at several institutions
  - Dr. Alex Hristov Penn State, USA
  - Dr. Eric Dugat-Bony and Dr. Diego Morgavi – French National Institute for Agricultural Research, France
  - Dr. Susan Bach – AAFC Summerland, BC
  - Dr. Alex Chaves – University of Sydney, Australia
  - Dr. Renee Petri – University of Veterinary Medicine, Vienna
  - Darryl Gibb – Alberta Feedlot Industry
  - Dr. Sarah Meale – University of Brisbane, Australia
  - Dr. Addah Weseh – University for Development Studies, Tamale, Northern Region, Ghana
  - Dr. Yan Niu – University of Calgary
  - Dr. Sheng Ping – Dalian University – China
  - Dr. Emma McGeough – University of Manitoba
  - Dr. Srinivas Sura – AAFC Morden, Manitoba
  - Dr. Martin Hünerberg –Georg-August-Universität Göttingen, Germany
  - Dr. Uchenne Anele – North Dakota State University, USA
  - Dr. Shanwei Xu - Alberta Agriculture and Forestry
  - Dr. Samuel Qi – Pioneer Hi-Bred Des Moine, Iowa, USA
  - Dr. Jorge Avila – Médico Veterinario, Universidad de Concepción, Chile
  - Dr. Brandon Gilroyed - University of Guelph, Ont
  - Dr. Tulio Jardim, Dr. Danielle Oss – San Paulo, Brazil
  - Dr. Jikun Chen – University of Oslo, Norway
  - Dr. Monica de Costa Dr. Monica de Costa - Portugal
  - Dr. Jacques Bamikolé Kouazounde - CAMES Université d'Abomey-Calavi (Bénin) – Africa
  - Dr. Collins Ateba - North West University South Africa, South Africa
  - Dr. Jorge Villarreal Gonzales - Benemérita Universidad Autónoma de Puebla, Mexico

Graduate students and Visiting Scientists

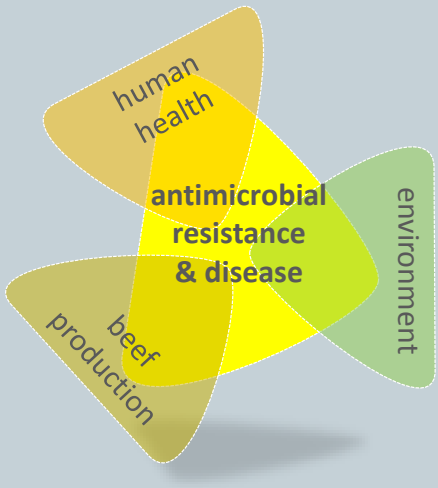
New opportunities

- Adjunct appointments
  - University of Calgary
  - University of Alberta
  - University of Manitoba
  - University of Lethbridge
  - University of Saskatchewan
  - Utah State University
  - Colorado state University
  - University of Sydney
  - University of Guelph
  - Kamassy University – Ghana
  - Dalian University of Technology - China

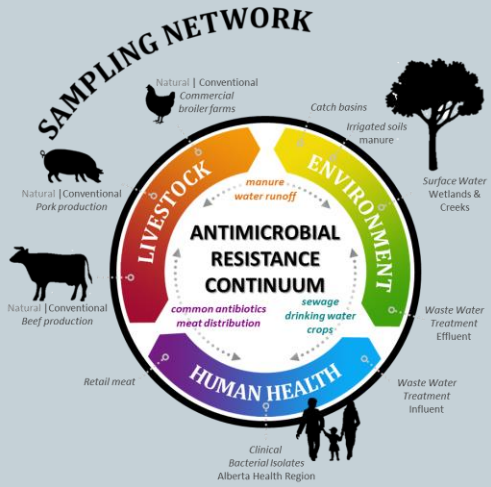
Collaboration: An example

- Antimicrobial Use – Antibiotic Resistance
  - Beef feedlots, urban communities, and environments
  - Research Project 2013-2018

Collaboration: An example



Collaboration: An example

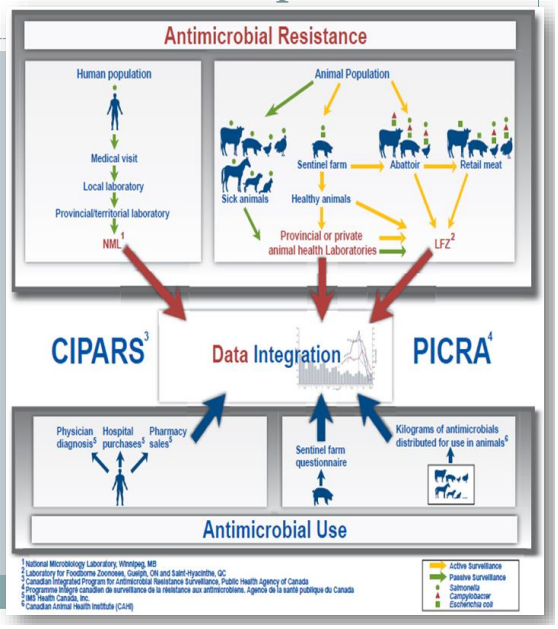


Collaboration: An example

- Sampling

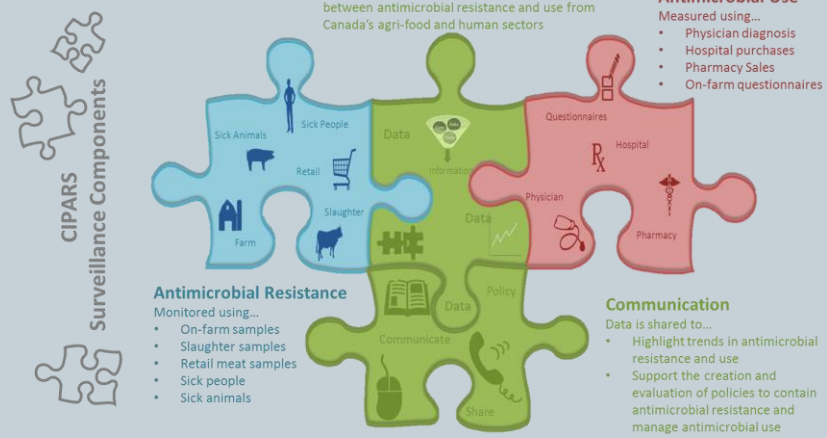
Collaboration: An example

- CIPARS
  - (Public Health Agency of Canada)



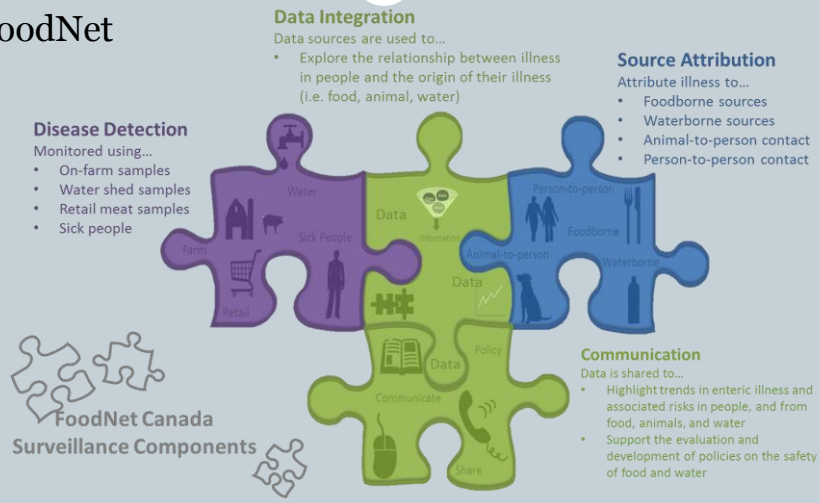
Collaboration: An example

- CIPARS



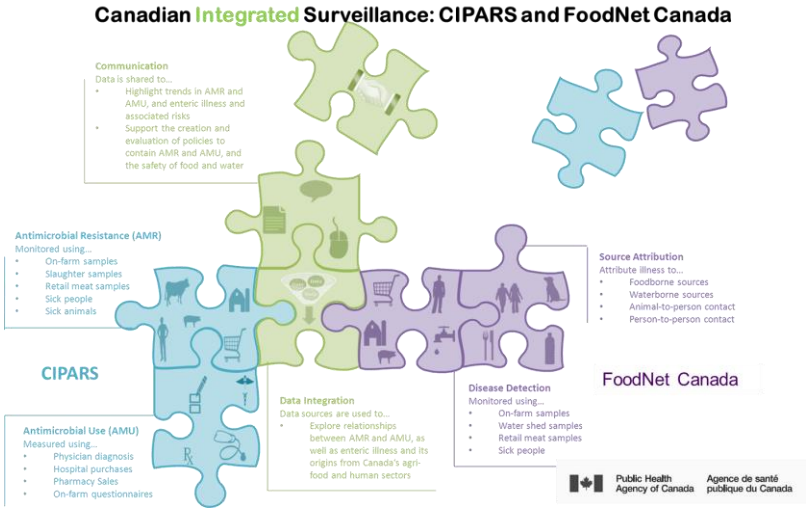
Collaboration: An example

- FoodNet



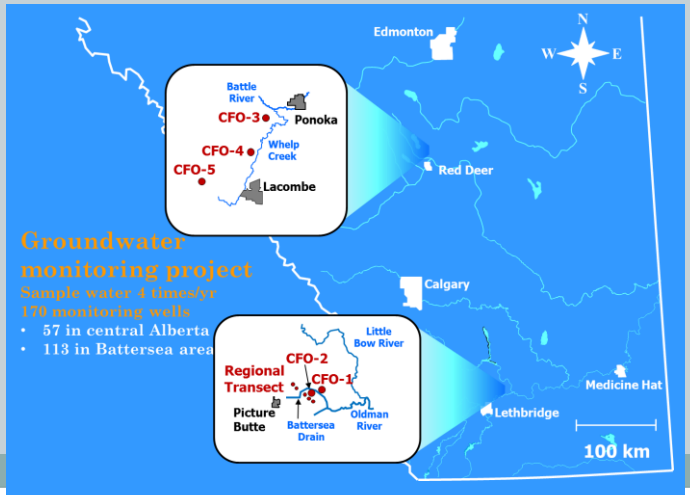
Collaboration: An example

- FoodNet + CIPARS



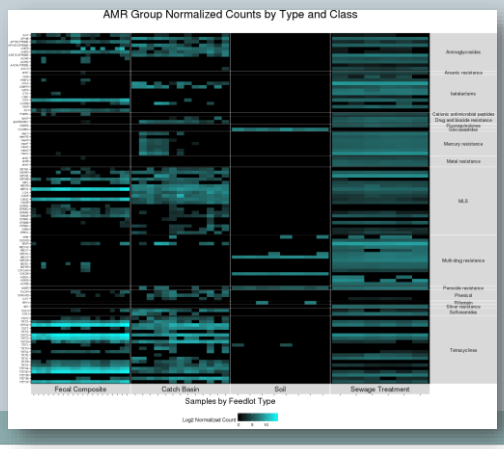
Collaboration: An example

- Alberta Agriculture and Forestry: Water Sampling



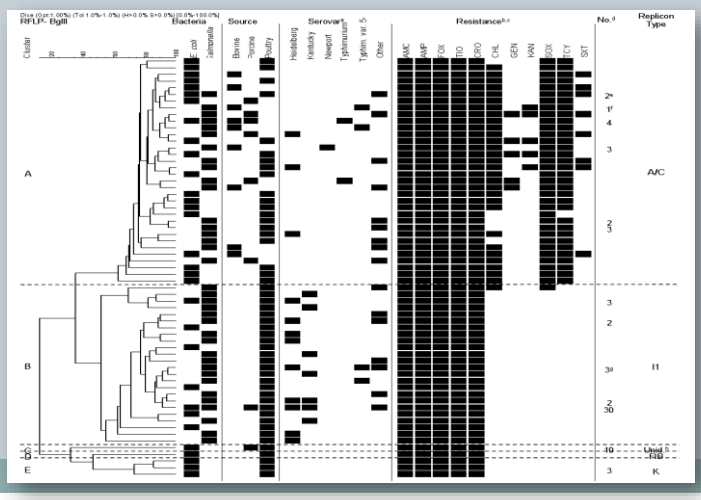
Collaboration: An example

- National Microbiology Laboratory
  - Public Health Agency of Canada
  - Winnipeg, MB
  - Metagenomics pipeline



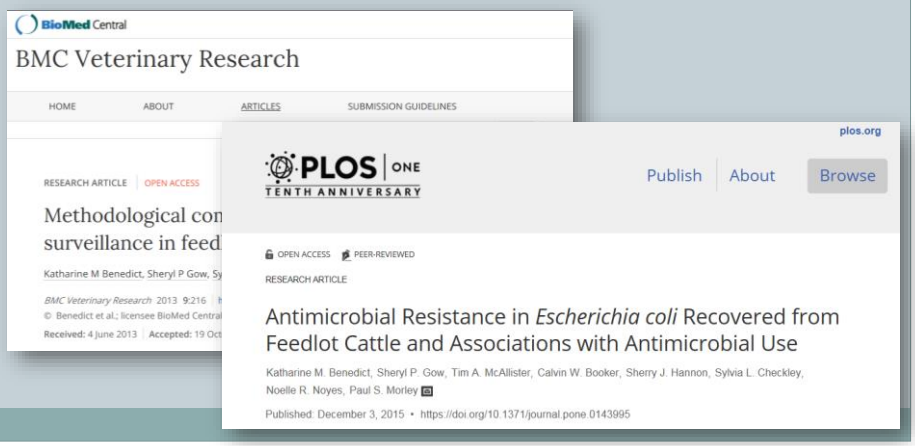
Collaboration: An example

- University of Guelph: Epidemiology



Collaboration: An example

- Colorado State University
  - Sequencing



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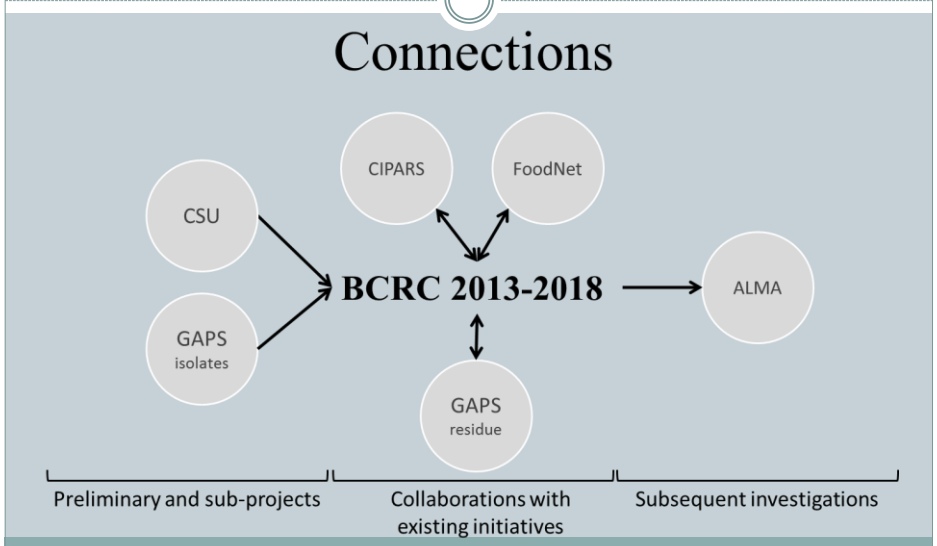
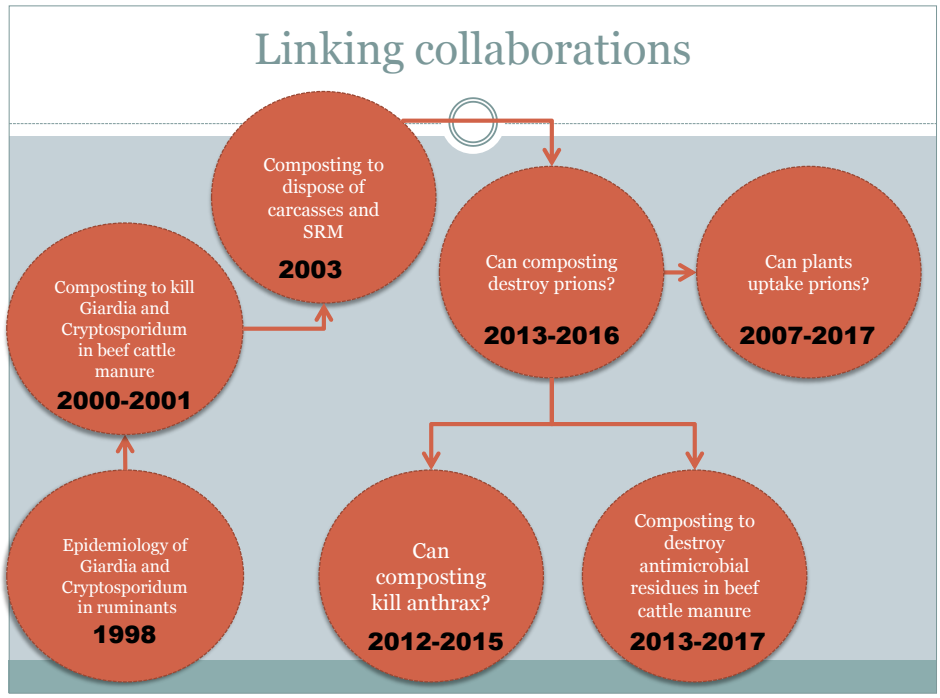
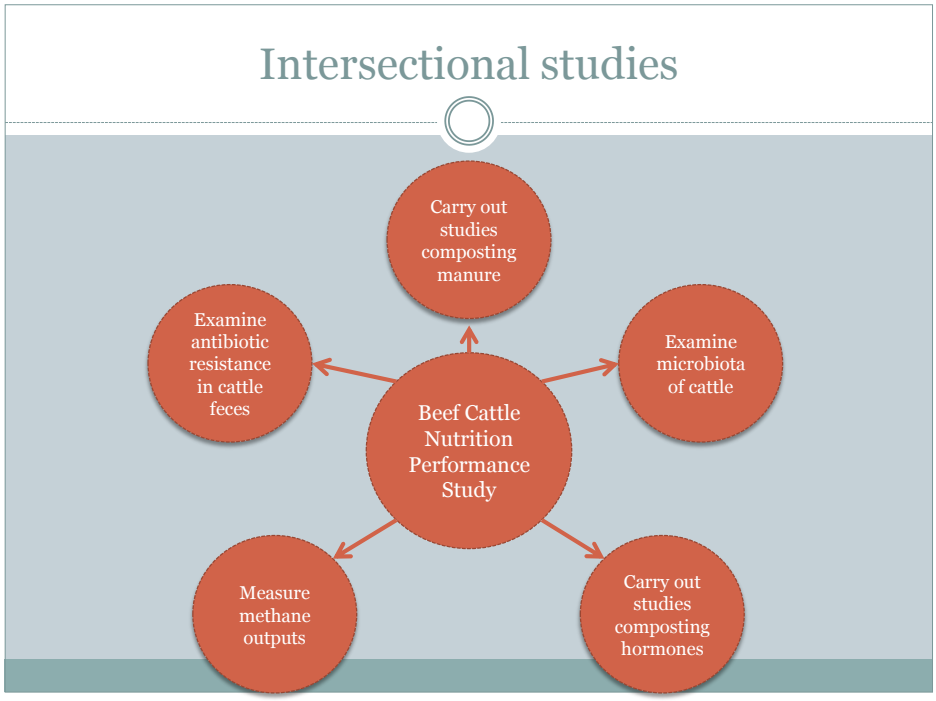


A successful collaboration: Outputs

- # of new/improved products: 2
- # of new/improved processes or systems: 1
- # of new/improved practices: 2
- # of new/improved genetic materials: 5 + 21 + 300 = 326
- # of new/ improved gene sequences: 14
- # of peer reviewed publications: 3 + 9 + 7 = 19
- # of information items: 5 + 2 = 7
- # of information events: 10 + 15 = 25
  - AB, Ont, MB, USA, Australia, England, Italy, China
- # of improved knowledge: 1
- # of persons who completed a degree: 1

398 outputs in 3 years


Linking collaborations
Composting to dispose of carcasses and SRM
2003
Can composting destroy prions?
2013-2016
Can plants uptake prions?
2007-2017
Composting to kill Giardia and Cryptosporidum in beef cattle manure
2000-2001
Epidemiology of Giardia and Cryptosporidum in ruminants
1998
Can composting kill anthrax?
2012-2015
Composting to destroy antimicrobial residues in beef cattle manure
2013-2017


Intersectional studies
Carry out studies composting manure
Examine antibiotic resistance in cattle feces
Examine microbiota of cattle
Beef Cattle Nutrition Performance Study
Measure methane outputs
Carry out studies composting hormones

All forms of life

Continued Connections after Collaboration

- Worldwide invitations to present data and create new collaborations

FarmSmart

jpiamr
Joint Programming Initiative on Antimicrobial Resistance

ANIMAL MICROBIOME CONGRESS

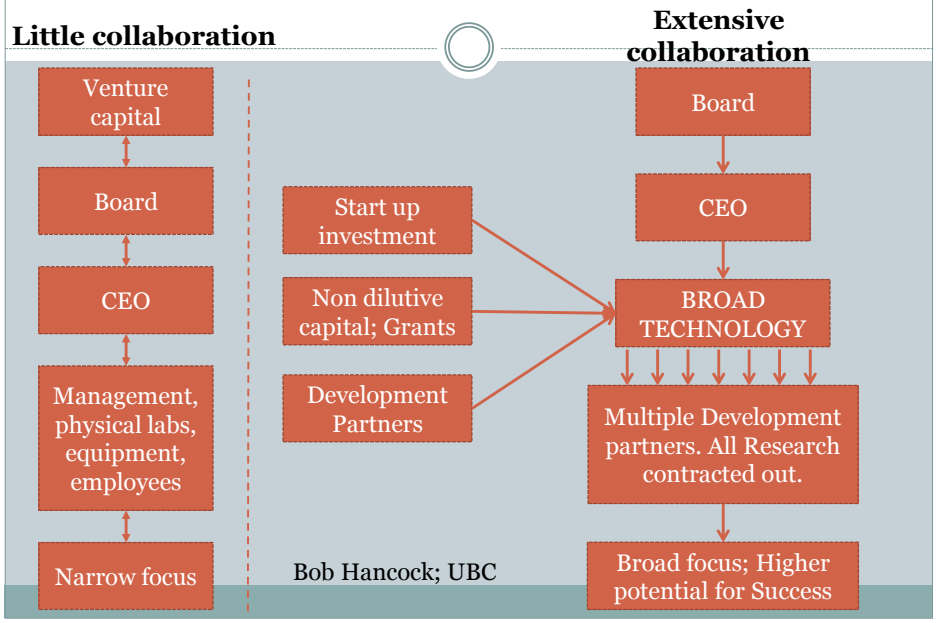
Current shared priority projects

▼ Antimicrobial Resistance (AMR)

Funding period: 2016-2021
Lead: Ed Topp, AAFC
Total GRDI funding: $9,074,991

The development of resistance to antimicrobials by bacteria that were formerly sensitive is one of the most serious global health threats facing the world today. With no action, annual worldwide human deaths attributable to antimicrobial resistance could reach 10 million by 2050. The Antimicrobial Resistance project uses a genomics-based approach to understand how food production contributes to the development of antimicrobial resistance of human health concern, and explore strategies for reducing antimicrobial resistance in food production systems. It is a component of the Federal Action Plan for Antimicrobial Resistance and Use in Canada. The project involves scientists from 5 federal departments and agencies.

Collaboration and product development



Conclusions

- Do not let not knowing much about something stop you from pursing it – collaboration can open all doors.
- Need to be comfortable in your own shoes.
- Put your self in the shoes of your collaborators.
- Keep your eye on the goal.
- Foster and maintain relationships.
- Love to learn.
- Have fun.

Current Lethbridge Research Centre McAllister Team

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