



Detecting and Determining Toxicological Effects of Ingredients to Contribute to Food Safety

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What is CRIS?



Center for Research on Ingredient Safety:

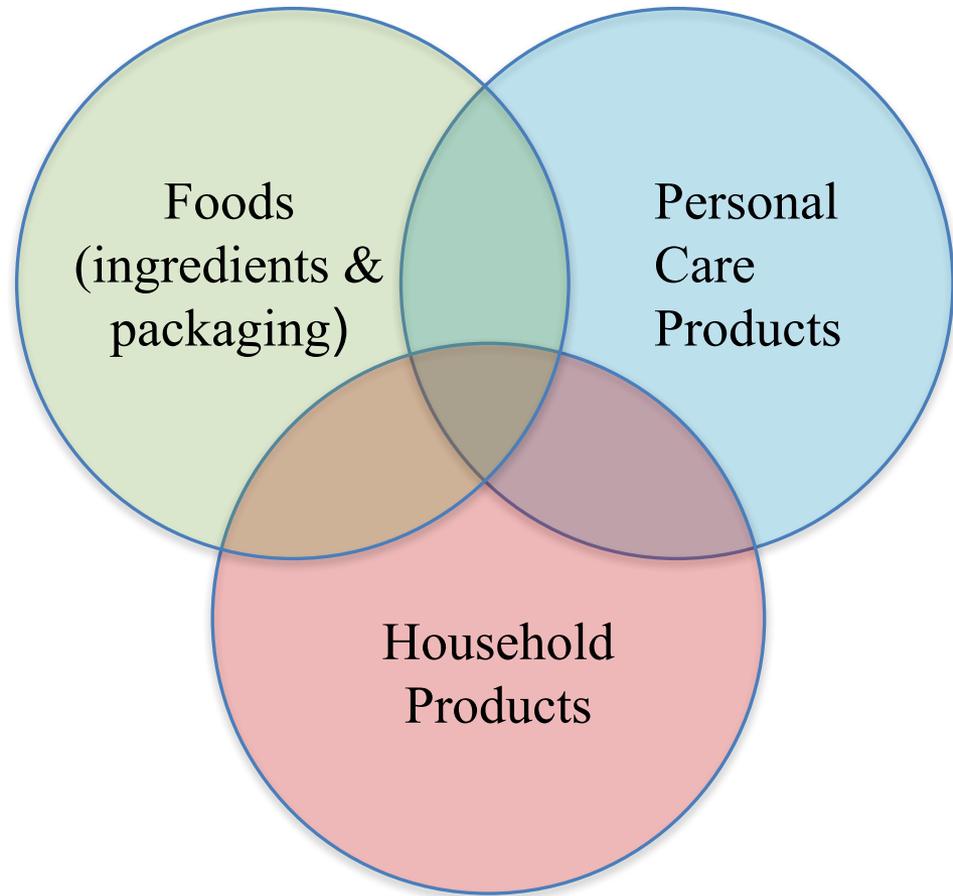
A new partnership between academia, industry, government, and NGOs focused on chemical-based ingredient safety

“MSU established CRIS to serve as a hub for objective science that adds rigor and data to the highly visible discourse on consumer product and ingredient safety”



What is CRIS?

Scope: CRIS will serve as a reliable and unbiased source for information, research, training, and analysis on the safe use of chemical ingredients in consumer packaged goods including foods, beverages, cosmetics and household consumer products





What is CRIS?

CRIS supports a gap in a key aspect of food safety:

Determining toxicological effects of ingredients





What is CRIS?



A program that will broadly build capability in chemical ingredient safety with specific and targeted focus in three areas:

- Scientific research
- Risk communication
- Education and training



MSU was chosen in a rigorous selection process

MSU has internationally recognized programs of excellence in:

- Toxicology
- Food Safety
- Packaging Science
- Food Science and Human Nutrition
- Agriculture
- Food Regulatory Law

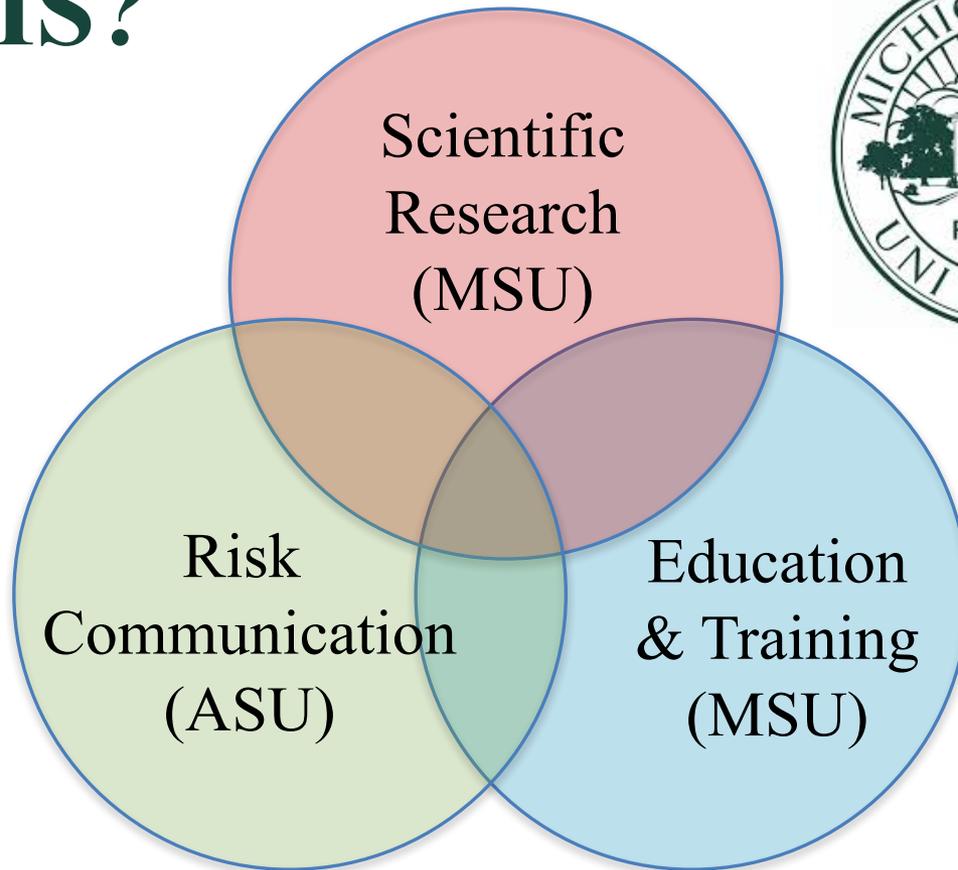
International and global in scope

CRIS established direct collaboration with Risk Innovation Lab within School for Future of Innovation in Society (ASU)



What is CRIS?

Components:





What is CRIS?

Created new track within MSU
Environmental & Integrative
Toxicology (EITS) Graduate
Program:

Food Toxicology & Ingredient Safety (FTIS)

(Launching in Fall, 2016)

Scientific
Research
(MSU)

Risk
Communication
(ASTJ)

Education
& Training
(MSU)





CRIS Strategic Map

Mission (*Why CRIS exists*):

Conduct research and provide insight on the safety of ingredients in food and consumer products to support evidence-informed decisions by consumers, industry and policy makers



CRIS Strategic Map

Vision (long-term outcome for CRIS):

Credible, relevant information on ingredient safety is accessible to a wide range of decision makers

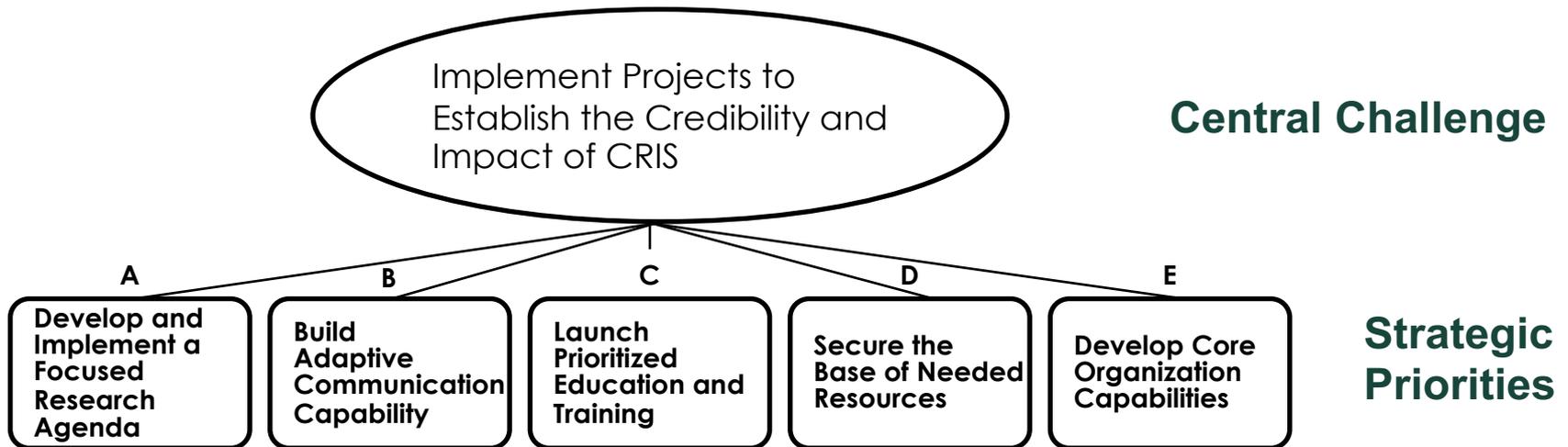


Core Values for CRIS:

- Integrity
- Responsibility
- Transparency
- Inclusivity
- Engagement
- Diversity



CRIS Strategic Map



<http://iit.msu.edu/cris/index.html>



- Develop and implement the Emerging Issues process
- Identify and prioritize the research strategy
- Implement high-priority, short-term research projects



Recent Milestones

Scientific Research

- Implemented Emerging Issues Process
- Networking with MSU academic unit leaders
- Distributed list of 10 topics for ‘white papers’ across MSU campus
- Developed list of 16 ‘Tier 1’ research projects
- Developing an RFP for MSU for Fall, 2016



Top Ten Choices

- Alternative approaches & Tox 21: Case study – endocrine disruptive chemicals
- Emulsifiers: Potential impacts on the gut microbiome
**
- Epidemiological evidence: Bringing together epidemiology, nutrition science & toxicology **
- Metals: Putting their impact on food safety into context
**
- Trichothecene Mycotoxins: Mechanism-based safety assessment **



Top Ten Choices

- N-hexane: Role of metabolism and relevance to humans
- Phycotoxins: Impact of these water-borne toxins on food safety
- Preservatives / antimicrobials: Review the risks and benefits **
- Residual aquaculture drugs in farmed seafood: Rising demand; but is it safe?
- Unavoidable contaminants or constituents: The need for a new science-based approach **



TARGET AREAS OF STUDY:

- Application of alternative testing for ingredient safety – status of existing models
- Gut microbiome and ingredient safety
- Impact of Maillard Reaction products on food safety
- Application of exposure science using dietary intake
- Toxicology of mycotoxins
- Investigator-initiated proposals relevant to CRIS Mission



- Establish processes to monitor, assess and respond to emerging issues
- Build relationships with key stakeholders
- Establish a media network and engagement strategy



Risk Communication

- Established CRIS Website (MSU)
- Recruited post-doctoral fellow (ASU)
- Created *CRIS Connects* (monthly newsletter; MSU)
- Launched *CRIS Bits* (blog; ASU)
- Networking with NGO community (ASU)



- Recruit CRIS tenure track faculty
- Implement plan to recruit / secure faculty engagement
- Implement by-laws and integrate the CRIS governance process



How to fill? . . . Progress to date . . .

- **My thoughts after arriving on the MSU campus**
 - Computational biology / toxicology
 - Exposure science / modeling
- **Progress to-date**
 - Final position descriptions have been developed
 - Final MOUs have been developed
 - Search committees have been populated
 - 1st committee meeting for Exposure position took place
 - 1st committee meeting for Comput. position took place



Why computational science / modeling? Some background . . .

- **FDA Strategic Plan**

- 1st Priority – *“Modernize toxicology to enhance product safety”*
 - 3rd Need – *“Use and develop computational methods and in silico modeling”*

- **FDA CFSAN Strategic Plan**

- 3rd Strategic Goal – *“Advance scientific leadership in bioinformatics to further the agency’s regulatory and public health decision making”*
 - 3rd Strategic Outcome – *“Develop and implement data management strategies and bioinformatics analysis tools for systematic interpretation of complex data”*



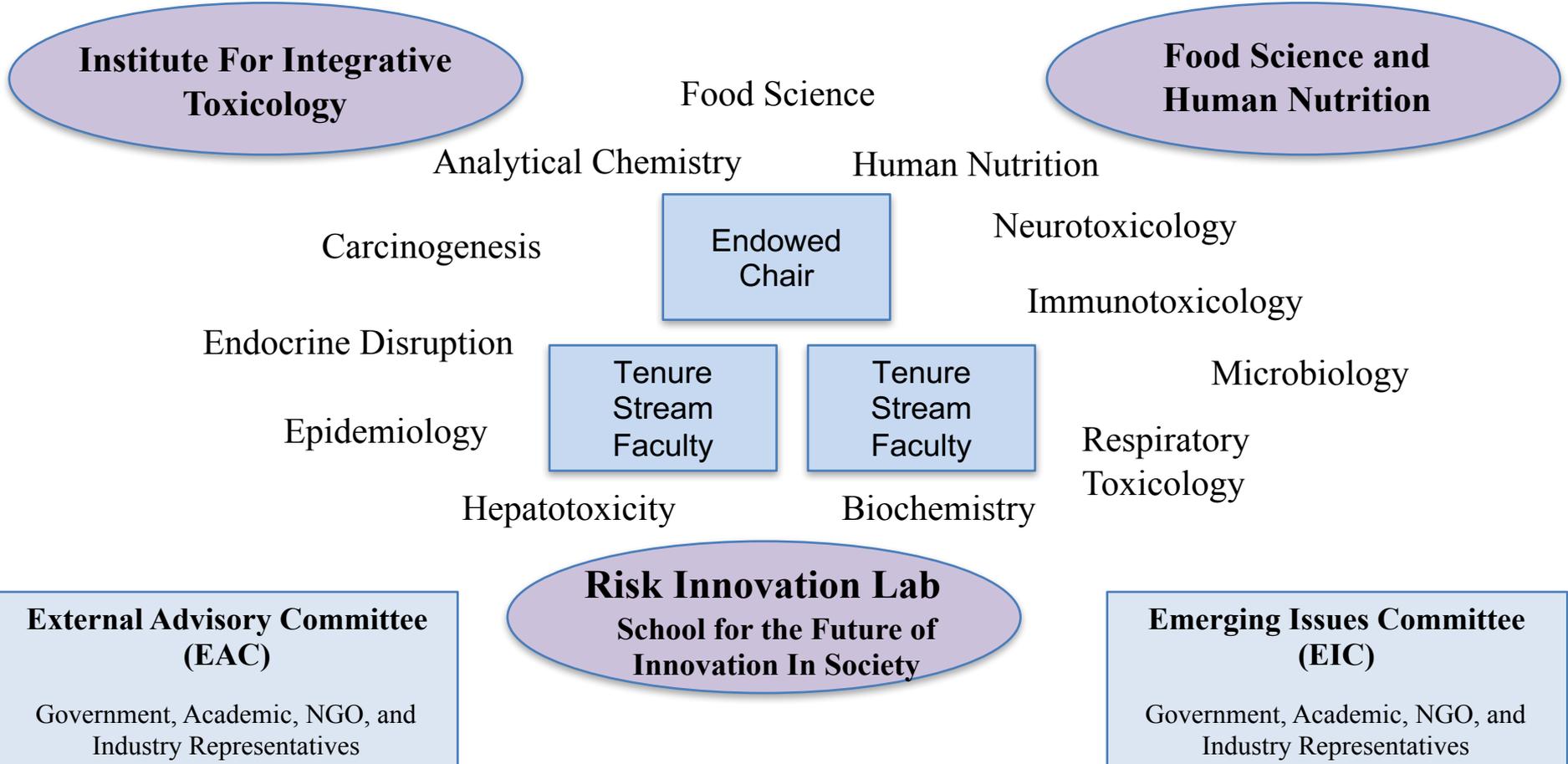
Why computational science / modeling? Some background . . .

- **2011 publication in Reg. Toxicol. Pharmacol.**
 - Title– “*Use of computational tools in the field of food safety*” (citation: 60(3):354-362, 2011)
 - “*Currently, the majority of stakeholders in the field of food safety do not apply computational methods on a routine basis, mainly because of a lack of in-house expertise*”
 - “*Computational tools are widely perceived to be a useful tool to support regulatory assessments and decision making in the field of food safety*”



Structure of CRIS

CRIS – Integrated Research, Training, and Risk Communication





CRIS Areas of engagement

- Basic and applied research on the safety and toxicology of ingredients used in food, packaging, cosmetics and household care products
- Development and validation of methods and strategies for evaluating ingredient safety
- Establish a graduate training program that will prepare professionals for careers involving
 - Assessment and management of ingredient safety
 - Regulatory compliance, US and international
 - Effective risk communication
- Inform the public, health professionals, regulators, and the scientific community on research matters reflecting the state-of-the-science pertaining to the safety and toxicology of ingredients in food, packaging, cosmetics and household care products
- Actively participate in dialog on important ingredient safety to support evidence-based decision making



CRIS Partners (1/2)

- **Abbott Nutrition**
- **BumbleBee Foods**
- **Bush's**
- **Campbell's**
- **Cargill**
- **Coca Cola**
- **ConAgra**
- **Dow Chemical**
- **Ecolab**
- **General Mills**
- **Givaudan**
- **GMA**



CRIS Partners (2/2)

- **Hershey's**
- **Hormel Foods**
- **Kellogg's**
- **KraftHeinz**
- **Land O'Lakes**
- **McCormick**
- **Mead Johnson Nutrition**
- **Mondelez**
- **Monsanto**
- **Pepsico**
- **Unilever**



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