The New Vineland

BETTER PLANTS.
BETTER LIFE.

# Canadian Agri-Food sector Genomics Strategy

## “Promise of the Genomics Crop Value Chain”

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Vineland Research and Innovation Centre

# The Vineland Model

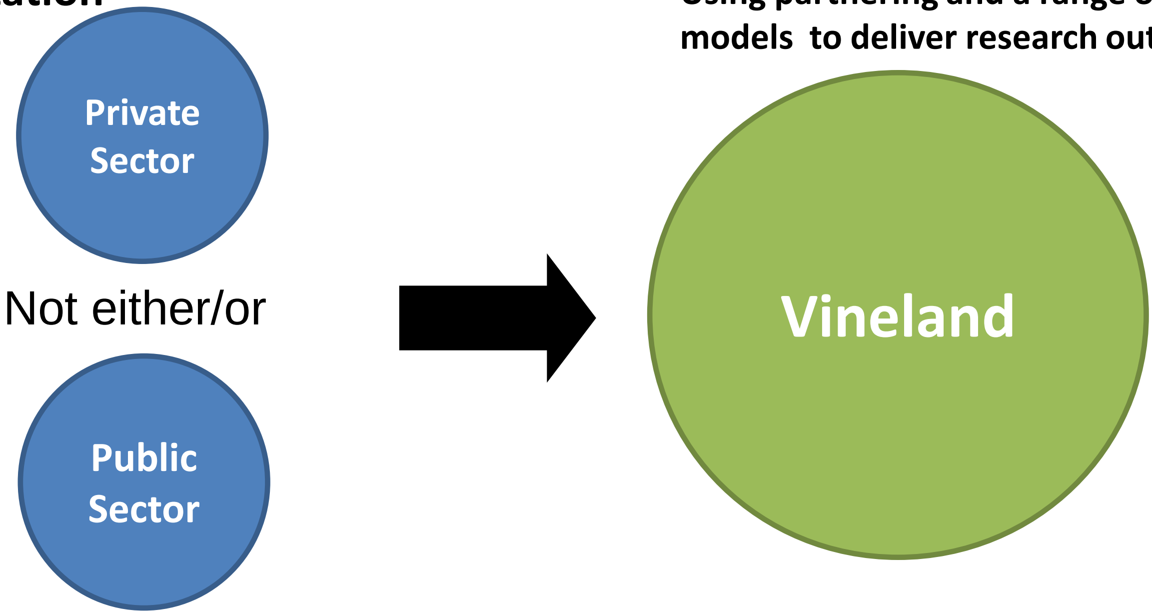
<u>**Current Models**</u>

<u>**Creative Resolution**</u>

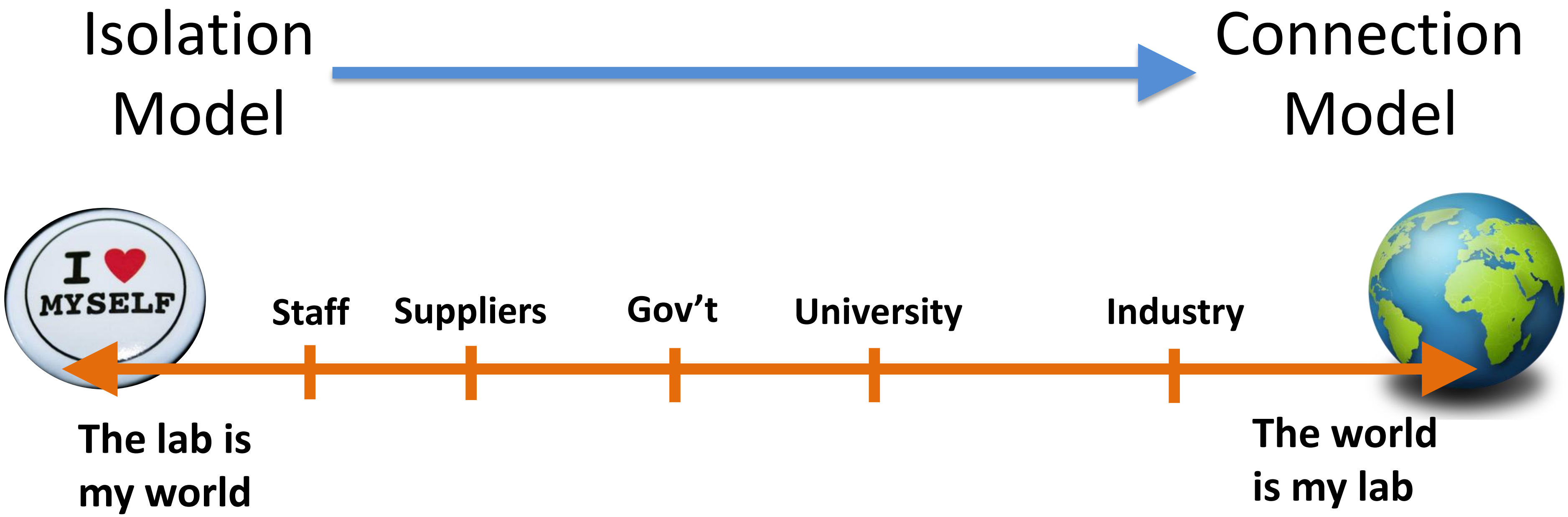
**Commercialization**

**Using partnering and a range of business models to deliver research outcomes**

**Research**



# Catalyzing partnerships to grow horticulture



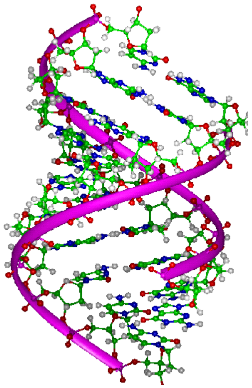
# Partnerships at Vineland

- Ontario
- AG Angels Gate Winery
- Washington State University – World Class. Face to Face.
- René Nicolaï – Fruitboomkwekerij
- Sunrise Greenhouses
- Campbell's
- Ontario Tender Fruit Producers
- Ontario College of Art & Design
- Brock University
- Pioneer Flower Farms Limited
- NIC Natural Insect Control
- Niagara College Canada
- Koppert Biological Systems
- John G. Wilson Machine Limited – est. 1953
- Lawn*Life Natural Turf Products – Go Green!
- Green Belt
- Novum
- Université Laval
- PBL
- Ontario – Agricultural Research Institute of Ontario / Institut de recherche agricole de l'Ontario
- Longo's – Since 1956
- Biobest Biological Systems
- Indaco Manufacturing Limited
- Rennie Estate Winery
- AEMK Systems Inc
- CMP – Cambridge Metal Products Inc.
- Envirogrow Systems
- Agriculture and Agri-Food Canada / Agriculture et Agroalimentaire Canada
- exosect – Intelligent Pest Management
- Westbrook
- KatanKitchens – SuperFoods for a healthier tomorrow
- University of Toronto
- the stop – community food centre
- Ontario Fruit and Vegetable Growers' Association
- the Foreign Affair winery
- Amaizeingly Green Value Products ULC
- landscape ontario.com – Green for Life!
- Dalhousie University – Inspiring Minds
- Cool Climate Oenology & Viticulture Institute – Brock University
- Western
- University of Guelph
- Vineland – Growers of Niagara's Finest Fruit
- Ball
- Canadian Nursery Landscape Association / Association Canadienne des Pépiniéristes et des Paysagistes
- ACN Inc.
- COHA ACHO – Canadian Ornamental Horticulture Alliance / Alliance Canadienne de l'Horticulture Ornementale
- Willow Drive Nursery
- George Brown College
- Flowers Canada Ontario / Fleurs Canada
- Niagara Parks.com – An agency of the Government of Ontario since 1885
- Golden Groceries Ltd.
- Toronto
- Ontario Apple Growers
- AIGN
- Monaghan Mushrooms
- Pico
- LSU – Louisiana State University
- Sundine Produce
- mushrooms.canada
- novozymes – Rethink Tomorrow
- V. Kraus Nurseries Ltd. – A Growing Tradition
- Ontario Greenhouse Vegetable Growers
- Brandt's Fruit Trees, Inc.
- Association Canadienne des Sommeliers Professionnels / Canadian Association of Professional Sommeliers
- BioWorks – How You Grow Matters
- star fruits
- Stevia First corporation
- Global Mechanic Media
- Plant Products
- International Cool Climate Chardonnay Celebration

# Research Programs

Apple Breeding
Rose Breeding
Ornamental Grape Breeding
Vegetable Breeding (flavor)

Reverse Genetics and
Bioinformatics for
trait development



# Reverse Genetics Rational

## Reverse Genetics

### Market Pull
- Retail performance
- Flavour
- Pest resistance
- Reduced inputs
- Improved nutrition

### Science Solution
- Discover new traits
- Natural variation
- Mutation
- Genetic modification

### Biological platform
- Population construction
- Methods development
- Computational biology

### Trait Discovery
- Mining populations
- Measure trait
- Handoff to breeding

### Deploy trait to market
- License to private sector (un-refined genetics)
- License to seed business as refined genetics

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ONTARIO GREENHOUSE VEGETABLE GROWERS

ONTARIO FRUIT AND VEGETABLE GROWERS' ASSOCIATION

SUNRISE GREENHOUSES

AAC agricultural adaptation council

FUNDING AGRI-IDEAS.

# Observations on partnerships

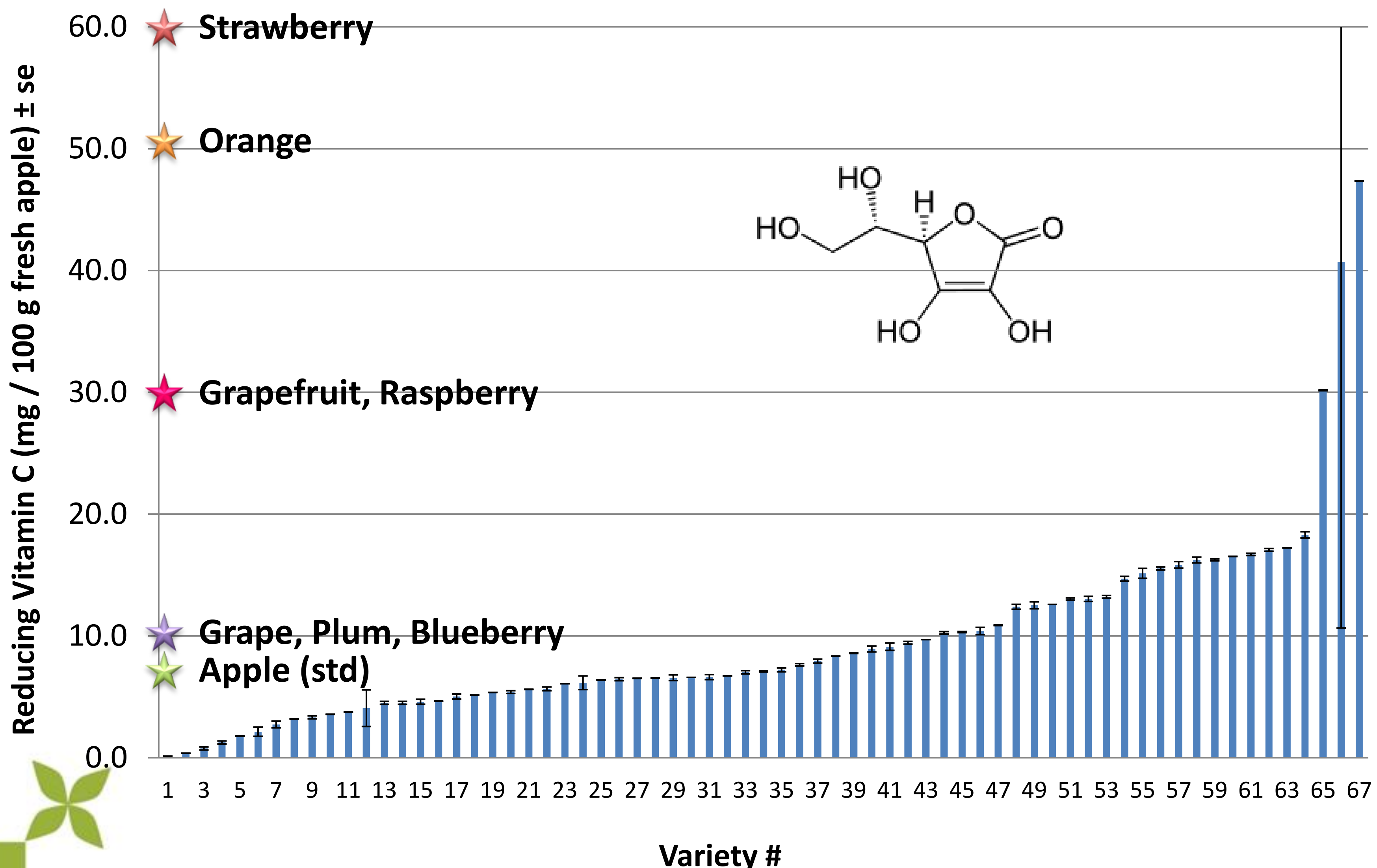
After 4 years at Vineland:

- Relationship building takes time – be patient
- Commodity groups are waking up to research investment and revenues.
- Zero/little tolerance for failure to report and deliver.
- Commodity groups are willing to explore exclusive or limited access to innovation.
- Genetics companies would prefer finished traits, less risk.
- Consortia are a good, precompetitive alternative, shared risk.

# Business and Science

- Choose the best partner! Commercial, genetics, distribution.
- Combine business and science as early as possible in partnership development.
- Pay  close attention to the priorities of industry.
- Universities have a wealth of innovation and are eager to out-license.
- Protect Canadian farming with no-export clauses if possible.
- Public requests commercial milestones.
- Private requests research milestones.
- Every project can have a unique commercial agreement.

# Vitamin C in apples



# Change is needed

- Industry directed research - not Academia, not Government.
  - AAFC-AIP program
- Communicate to industry what is possible
  - facilitate setting priorities
  - Develop and <u>deliver</u> scientific solutions
- Must have a receptor/outlet for all research (<u>partner</u>)
- Need proper metrics to measure success.
- Canadian research horsepower!

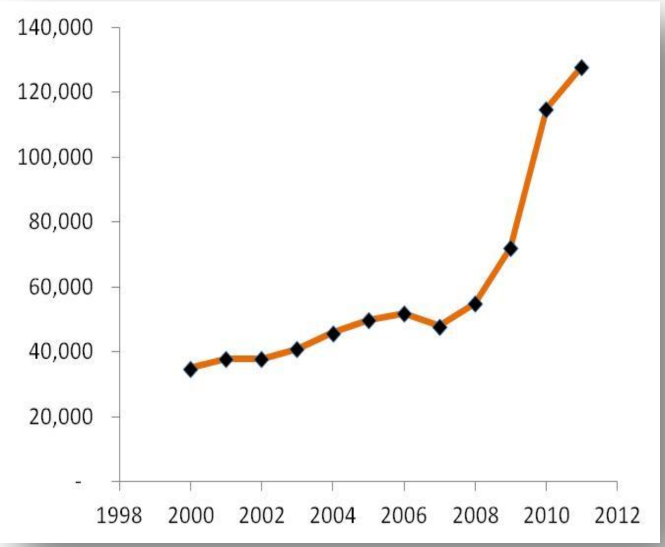
- <u>Beware</u> of incremental research masquerading as change.

# Comments on Research Strategy Document

- Economic wealth for Canadian farming and industries.
- What are we not growing and should be?
- Nutritious food vs Human behaviour.
    - Bio-fortification
- Climate change and need for abiotic stress resistance.
- Economics
    - Canada first
    - Differentiation leads to market share
- Metrics
    - How will we measure success?
    - Need to set some measured economic goals.
- Corporate Canada investment

# Sweet Potato Opportunity

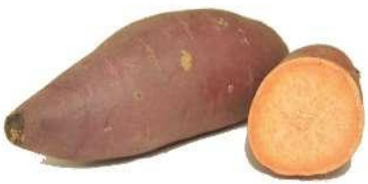
Imports
x1,000 lbs




Year

- Consumption – up 89% 2006-2010
- Canada is second largest importer 115M t.
- 20 growers with ~1,600 acres in 2012

- Fresh Market
- Processing
  - Chips/Fries
  - Baby Food
- Natural food dye







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# Thank you!

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