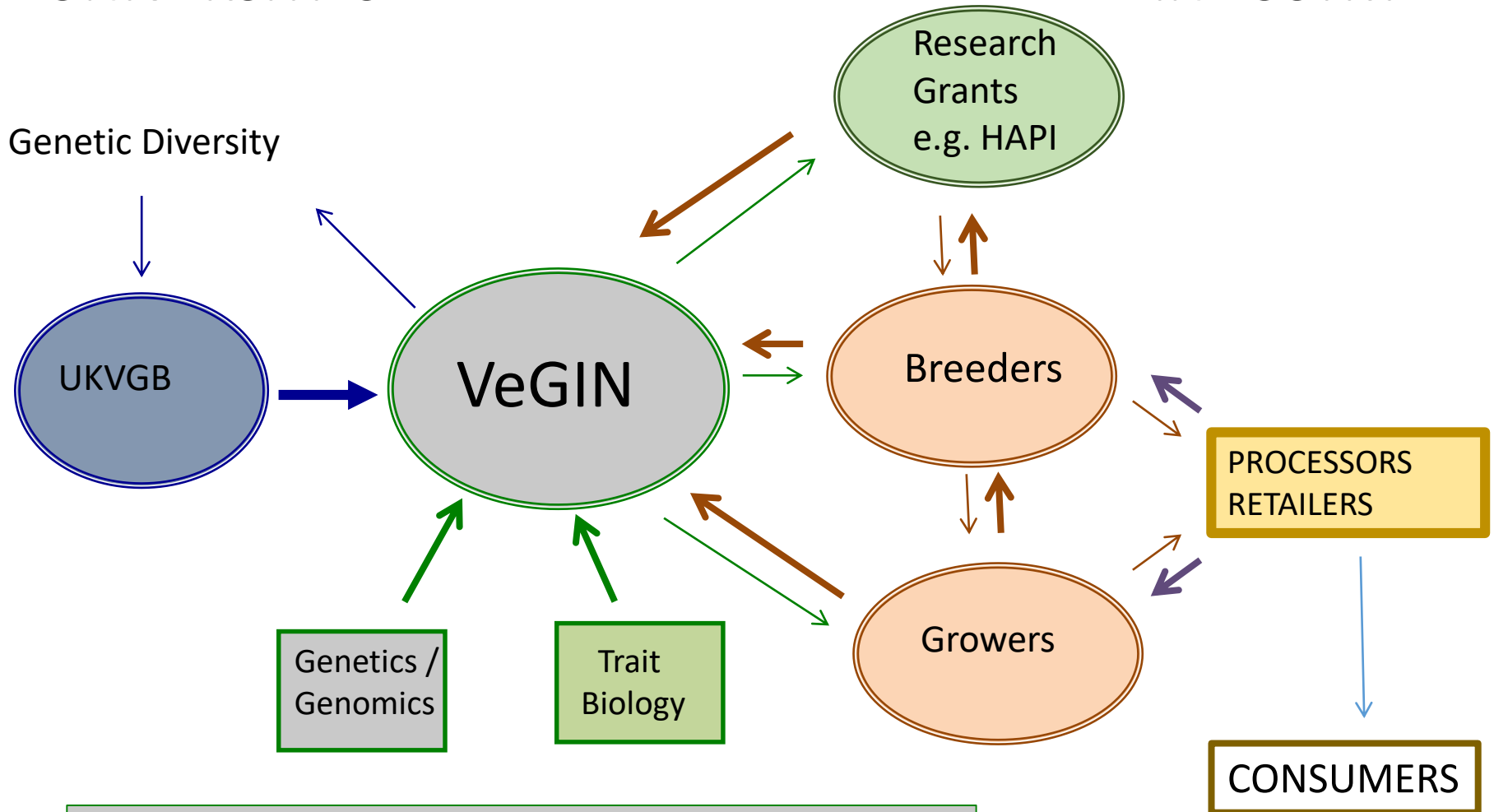


Vegetable Genetic Improvement Network (VeGIN)

VeGIN Pipeline

UNIVERSITIES

INDUSTRY



University of Warwick | Harper Adams University

VeGIN Crops

Brassicas



Leafy Vegetables



Carrot



Onion



Cauliflower
Broccoli
Calabrese
Cabbage
Sprouts
Kale

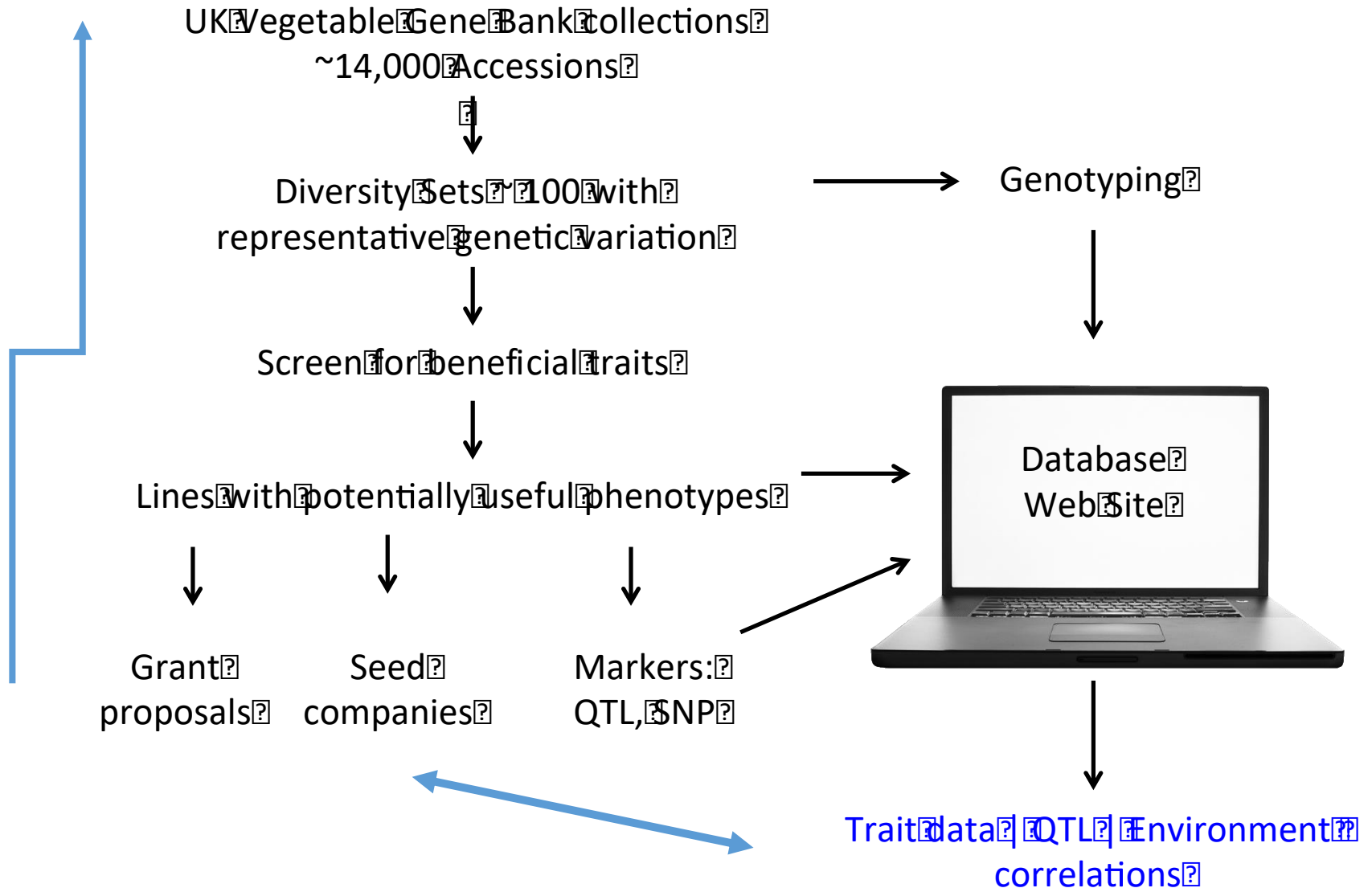
Lettuce
Rocket

Parsnip

Bulb onion
Spring onion
leeks

A reservoir of diversity
Current and Old varieties
Landraces
Crop wild relatives

Exploiting Genetic Resources



VeGIN

Our Aim to continue to build and sustain a stakeholder network for UK vegetable crops (**brassica, lettuce, onion and carrot**)

- Maintain and improve existing experimental populations and diversity sets of carrot, onion, brassica and lettuce.
- Where necessary, produce new mapping populations for important commercial traits (i.e. disease resistance, yield, crop establishment and rooting traits)
- Employ new technologies to analyse existing germplasm and develop new molecular markers for traits predicted to expand these crops' market potential, thereby ensuring the UK's uptake of modern breeding methods, including those based on transcriptome and next generation genome sequencing techniques
- Carry out field and glasshouse trials of selected lines to facilitate the incorporation of beneficial genes into breeding programs.

Prioritisation of traits for the next phase of VeGIN

Stress	Brassica	Carrot	Lettuce	Onion
Insect				
Chewing	Diamondback moth			
	Cabbage root fly			
Sucking	Cabbage aphid		CL aphid	
Fungal/ oomycete				
Root	Clubroot	Cavity spot	Fusarium	Pink root
Foliar	Downy mildew			Downy mildew
	Powdery mildew White rust			
Viral		CYLV		
Bacterial	Black rot			
Abiotic				
Water			X	
Temp.			X	
Nutrient			X	

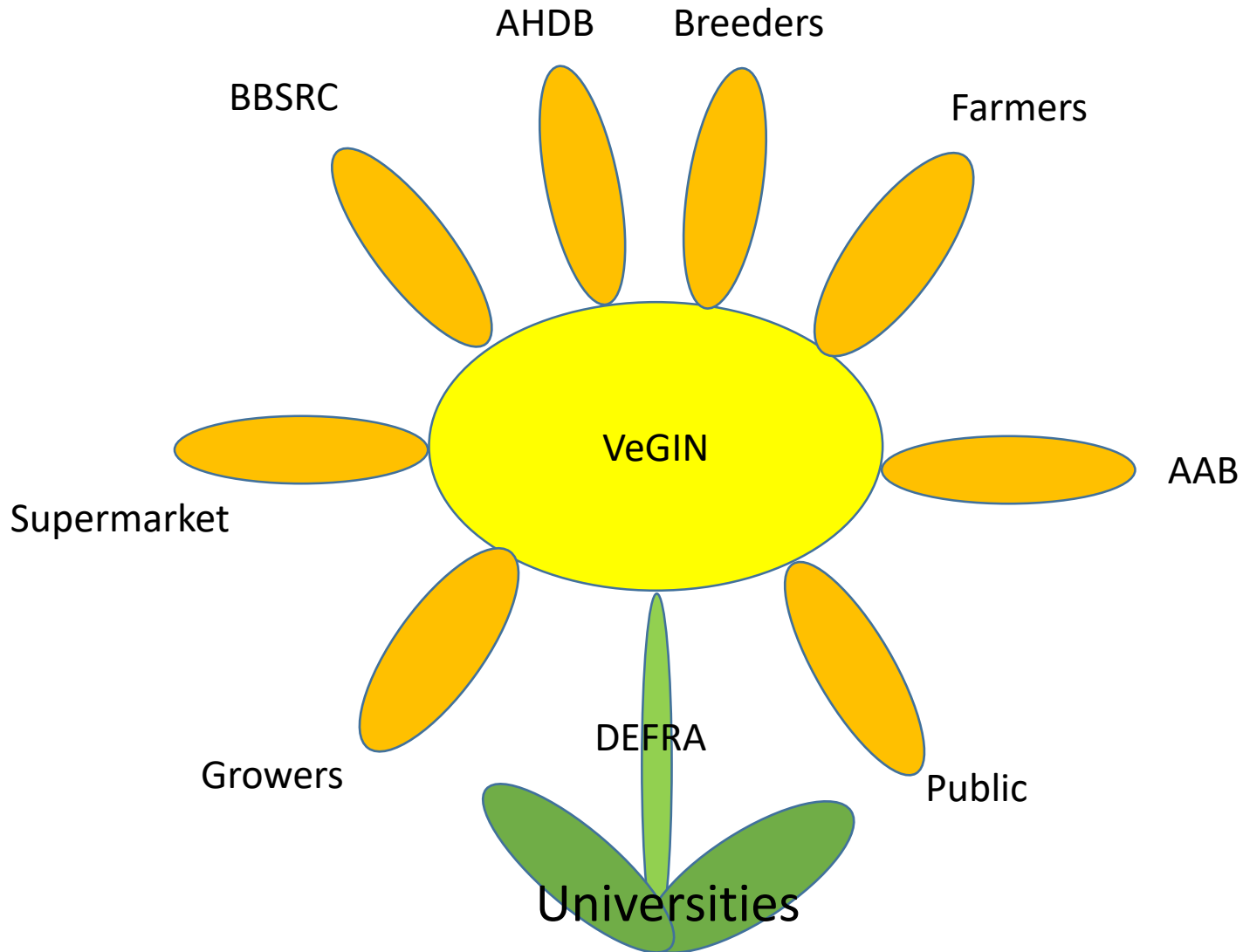
Outputs / Added Value

- **Funding – current competitive grants**

1. Exploiting sources of resistance to Turnip yellows virus for deployment in oilseed rape. John Walsh (BBSRC CIRC, 2012 -2016, £487 k)
1. Exploiting next generation sequencing technologies to understand pathogenicity and resistance in *Fusarium oxysporum*. John Clarkson (BBRSC HAPI, £812 k)
1. Developing genetics and genomics interface in mustard. Guy Barker, Eric Holub (BBSRC/DBT, 2014-2017, £1.2 m)
1. Developing integrated approaches for pest and disease control in horticultural field crops (IAPAD). John Walsh, Martin Williamson (BBSRC HAPI, £925 k)
1. A genetic approach to improving post-harvest quality. David Pink , Carol Wagstaff, Guy Barker (BBSRC HAPI, £1.024 m)
1. A systems approach to disease resistance against necrotrophic fungal pathogens. Katherine Denby, Carol Wagstaff, John Clarkson, Paul Hand (BBSRC HAPI, £882 k)

Total ~ £5.3 M

Stakeholder engagement and dissemination of knowledge



VeGIN for the Future

- Successful future Rural Economy
 - Improved crop varieties with markers, open access to phenotype and marker data
 - Innovation, competitiveness, knowledge transfer
- Maintaining food security
 - Diverse, resilient supply chains
- Leading the world in R&D, innovation
 - Agri-Food and Food Innovation

The 2017 VeGIN Team



Guy Barker

Graham Teakle

Rosemary Collier

John Clarkson

Charlotte Allender

John Walsh

Eric Holub

Neale Grant

Maz Elliot



**Harper Adams
University**

Jim Monaghan

Andrew Beacham



Department
for Environment
Food & Rural Affairs

Martin Cannell

Yaad Sidhu