



Institut de Recherche en
Horticulture et Semences



<http://www6.angers-nantes.inra.fr/irhs>

Member of

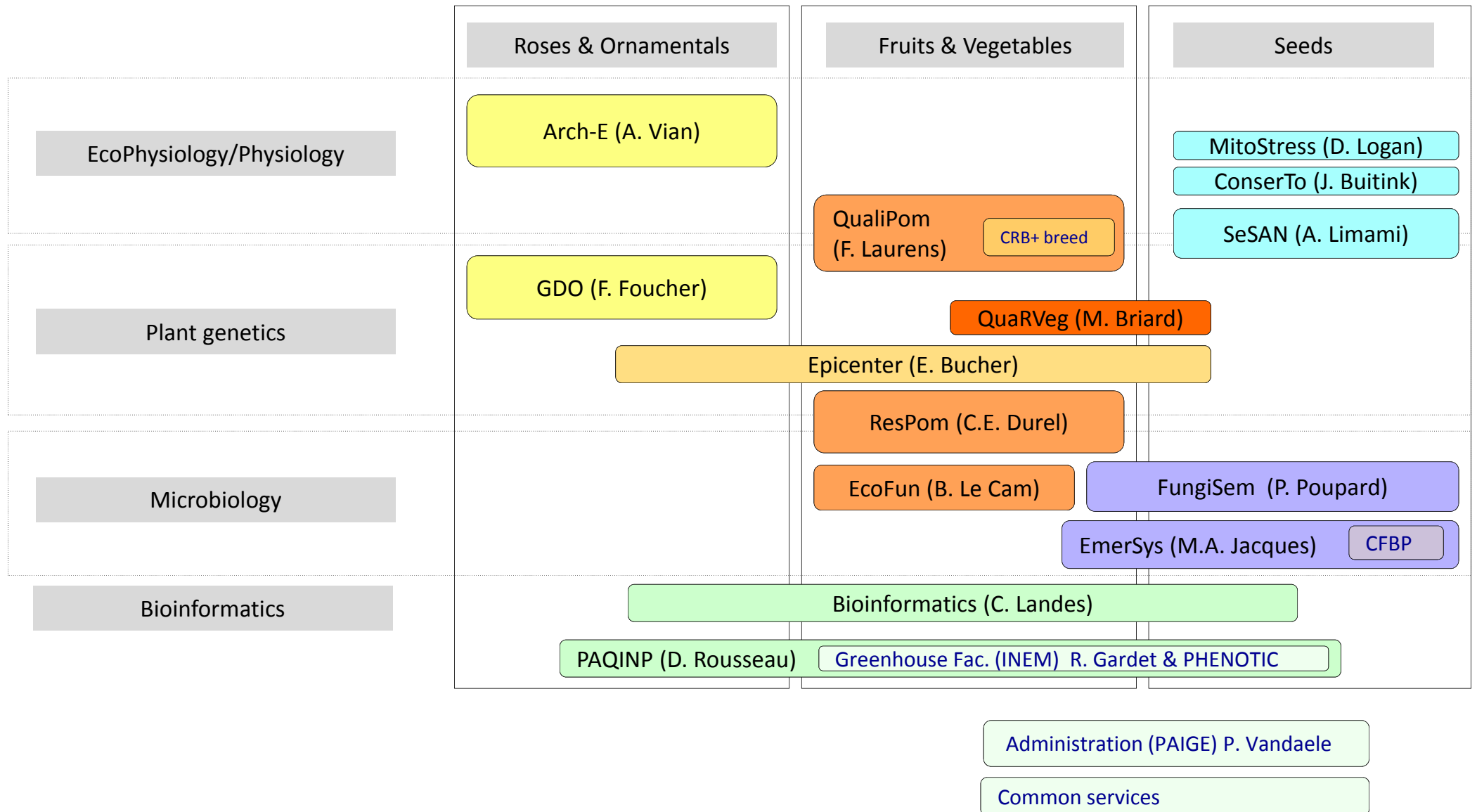


Functional organisation in 2017



Management Board

Director: J.P. Renou, Deputy Directors: M. Briard, F. Laurens & P. Simoneau,
F. Foucher, O. Leprince, S. Sakr, P. Vandaele (Admin)





QualiPom team

Quality of Pomoideae:
Breeding, Genetics, Ecophysiology and
Modelling



towards a Functional-Structural Plant Model (FSPM) to explain apple fruit growth and quality built up

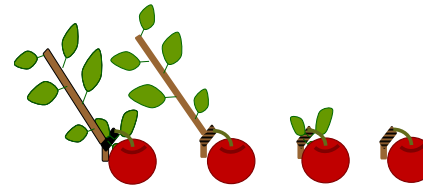
→ **Development of tools and methods to simplify representation of 3D architecture**



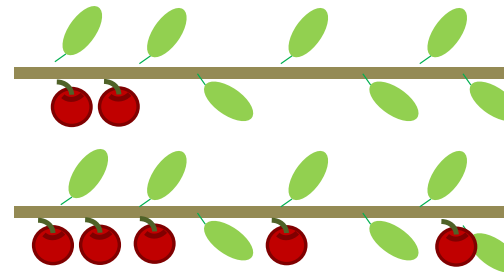
→ **Model parametrisation**

...by data acquisition on source and sink through field experiments on simplified structures at 2 levels:

Spur level :
defoliation
treatments



Branch level :
fruit load
treatments



INRA-PSH, Avignon
INRA-AGAP, AEFE,
Mtp
UE Horti

PhD, Post-Doc :
E. Bairam ,
M. Poirier-Pocovi

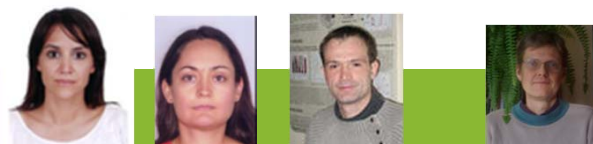
Poste Stratégique G.
Buck-Sorlin



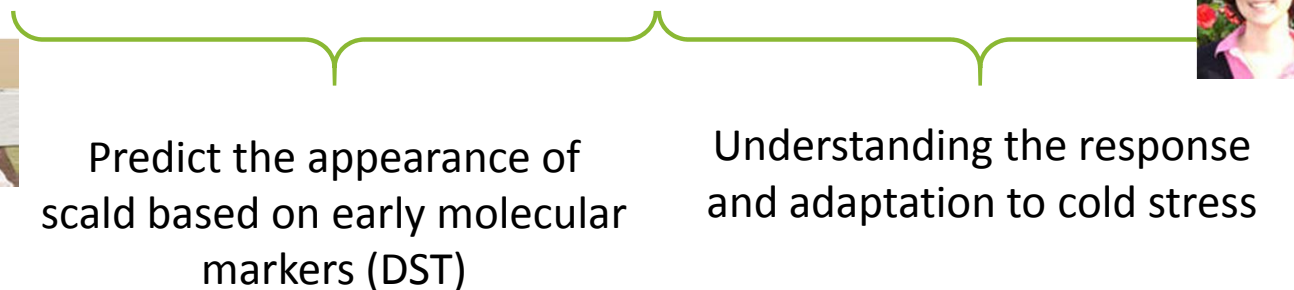
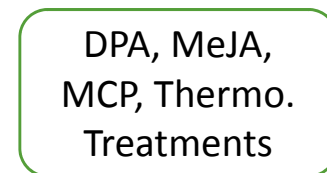
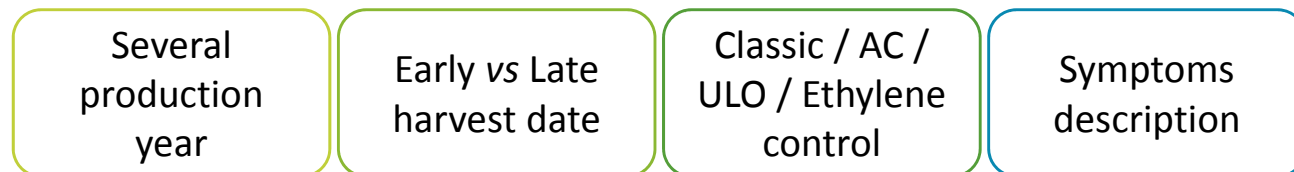
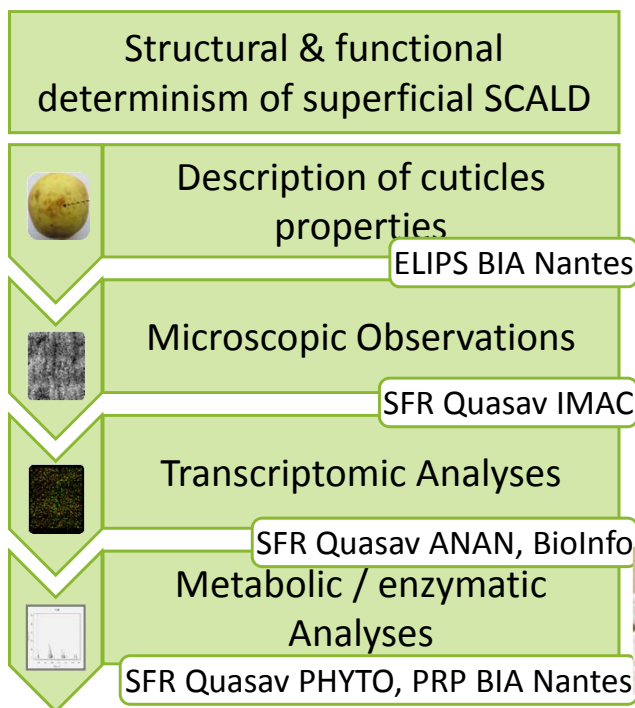
«FSPM APPLE» project



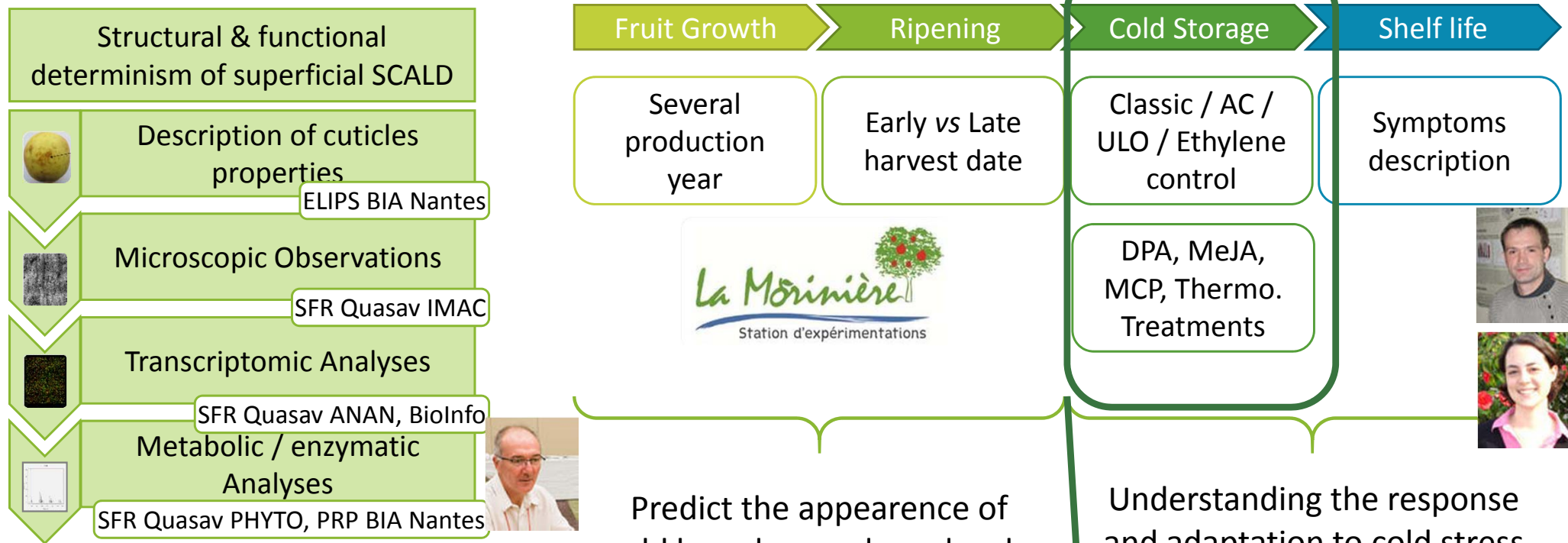
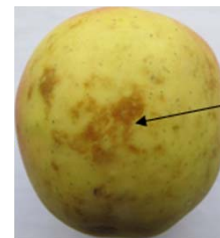
Input for the transport model



Postharvest Quality: control of physiological disorders



Postharvest Quality: control of physiological disorders



Predict the appearance of scald based on early molecular markers (DST)

Understanding the response and adaptation to cold stress

?Inumamet 2?
Effects of cold storage conditions on health attributes (Polyphenols)

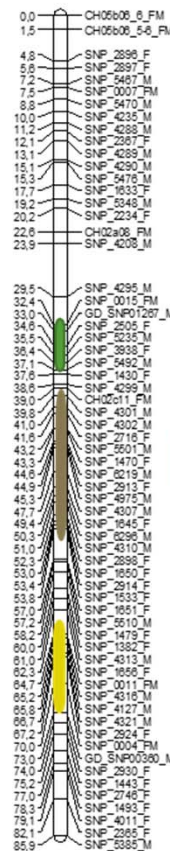
From Quantitative Genetics to Transcriptomics

Selection of differentially expressed genes Within the CI of the QTLs

Biological Function	Log ² ratio (p-value)		
	C1	C2	C3
Cell wall loosening: Expansin	3.19 (*)	1.68 (*)	0.91 (*)
Flavonoid pathway	-2.95 (*)	-1.47 (*)	-2.55 (*)
	-2.19 (*)	-1.4 (*)	-2.99 (*)
Response to abscisic acid	-3.36 (*)	-2.31 (*)	-3.25 (*)
Histone acetyltransferase	-1.6 (*)	-2.69 (*)	-2.15 (*)
ATP & Protein binding	-1.24 (*)	-1.73 (*)	-0.9 (*)
Ethylene receptors biogenesis	1.33 (*)	0.84 (*)	0.12 (*)
Cell wall modification	1.77 (*)	1.3 (*)	2.06 (*)
Cell wall organisation	1.25 (*)	1.34 (*)	2.28 (*)
Oxidation reduction process	-0.98 (*)	-0.79 (*)	-1.08 (*)
	-2.2 (*)	-1.34 (*)	-1.08 (*)
Jasmonate pathway	-0.91 (*)	-1.03 (*)	-2.44 (*)
	1.32 (*)	1.12 (*)	0.41 (*)

C1-C2-C3: 3 pairs of progenies showing distinct texture characteristics
Firm+non mealy vs Soft+mealy

Chr 10



Genomic Regions associated to sensory perception of apple flesh texture

- █ Fruit Incomplete Maturity
- █ Genotype Specific
- █ Fruit Full Maturity

