


## Toward the Improvement of the Gene Centered Information in Grapevine Genomics

Super Nomenclature Committee  
A-F Adam-Blondon  
Unit of Research in Genomics Informatics

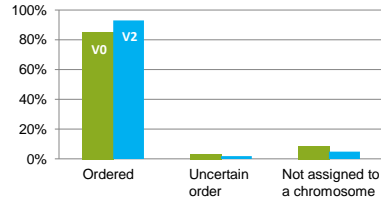


PLANT AND ANIMAL GENOME CONFERENCE 2014  
SAN DIEGO, CA, USA  
12/01/2014

### A little bit of context...

The grapevine reference genome sequence is evolving

- Improvement of the chromosome assembly (see P417)=>12X.2 version of the 19 chromosomes + 1 random



- Improvement of its annotation (talk of S. Rombauts) => V2 version of the annotation

### A little bit of context...

The new chromosome assembly is available at <https://urgi.versailles.inra.fr/>

.03

### <https://urgi.versailles.inra.fr/Species/Vitis/Data-Sequences/Genome-sequences>

Download the sequences and related information

.04

### A little bit of context...

A lot of knowledge is continuously being gained on grapevine gene and their functions

- Expert-based structural annotation of gene families

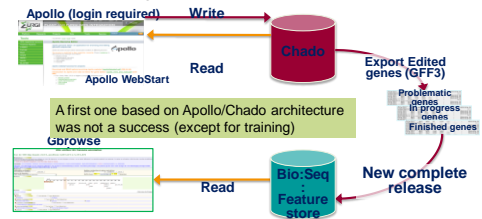
	Missed genes/pseudogenes			Bad models for coding genes		
	TPS	STS&CHS	NBS-LRR	TPS	STS&CHS	NBS LRR
V0	35%	58%	44%	77%	77%	65%
V1	na	na	34%	na	na	68%
Eugene	8%	2%	6%	19%	36%	53%

- Gene functional characterisation: transcriptomics, mutants, etc...

Highly decentralized information, many inconsistent gene naming, poorly implemented in databases

### A little bit of context...

Centralization of gene related data requires a central information systems, user friendly interface and query systems and time dedicated to tailoring



New start with the ORCHAE information system (S. Rombauts)

**A little bit of context...**

There is a need for common rules for gene naming in order to improve:

- consistency between studies
  - integration of decentralized data, recent and historical
- 
- Formation of an **International Super Nomenclature Committee** coordinated by J. Grimplet under the auspices of the IGGP consortium
  - Major output of the **GRCN NSF program** (G. Cramer coord) and will follow up through the EU COST FA 1106 (M. Pezzotti co-coord)

**Super Nomenclature Committee**

- **Coordinator: Jérôme Grimplet** (CSIC-Universidad de La Rioja-Gobierno de La Rioja, Sp)
- Anne-Francoise Adam-Blondon (INRA Versailles, Fr)
- Pierre-François BERT (Université de Bordeaux, Fr)
- Oliver Bitz (Geisenheim University, D)
- Dario Cantu (University of California Davis, USA)
- Grant R. Cramer (University of Nevada, Reno, USA)
- Christopher Davis (CSIRO Plant Industry, Aus)
- Serge Delrot (Université de Bordeaux, Fr)
- Mario Pezzotti (University of Verona, It)
- Stephane Rombauts (VIB-Ghent University, B)



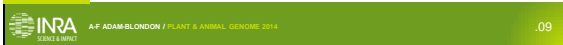
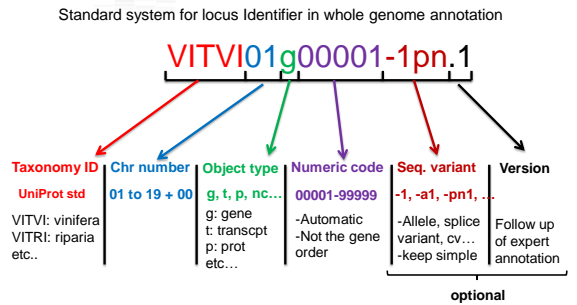
**Conventions**

Elements	Locus ID	Full Name	Symbol	Synonyms
<b>Example</b>	VITO1g00000-1.1	(V. vinifera) Alcohol dehydrogenase 1	(vvi)ADH1	GV-ADH1 aldehyde reductase ethanol dehydrogenase GSVVVTO1010024001 VIT_18s0001g15410
<b>Description</b>	Genome localization	-Descriptive function -Includes the level of quality of annotation	- Size limited - Descriptive of function if possible	Any known synonyms

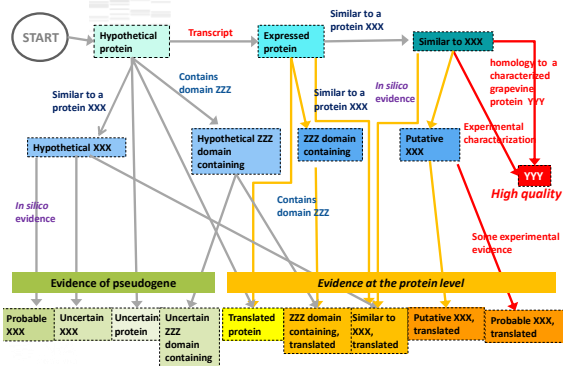
Physical address      Function      History Redundancy

**Must be unique**

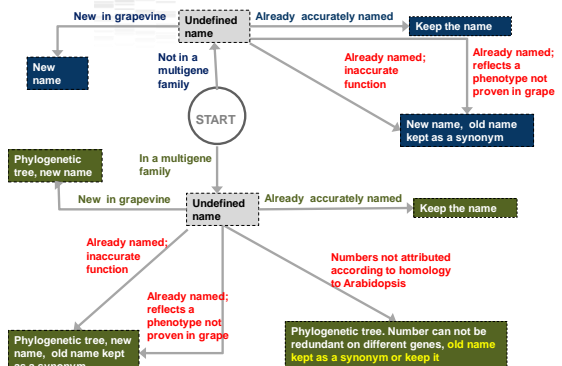
**Locus ID = unique genome address**



**Full name and quality level of the annotation**



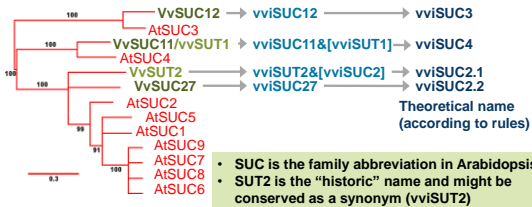
**Symbol : multigene families and historical data**



## Symbol choice : example of the Sucrose transporters

### Issue : genes have multiple names in the literature

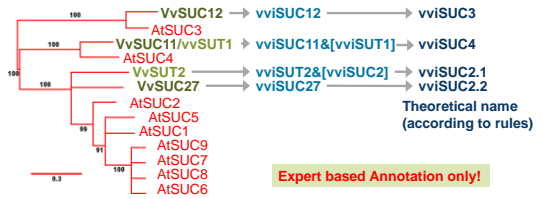
- Davies C, Wolf T, Robinson SP. Three putative sucrose transporters are differentially expressed in grapevine tissues. *Plant Sci* 1999, 147: 93-100.
- Ageorges A, Issaly N, Picaud S, Delrot S, Romieu C. Identification and functional expression in yeast of a grape berry sucrose carrier. *Plant Physiol Biochem.* 2000;38(3):177-185



## Symbol choice : example of the Sucrose transporters

### Issue : genes have multiple names in the literature

- Davies C, Wolf T, Robinson SP. Three putative sucrose transporters are differentially expressed in grapevine tissues. *Plant Sci* 1999, 147: 93-100.
- Ageorges A, Issaly N, Picaud S, Delrot S, Romieu C. Identification and functional expression in yeast of a grape berry sucrose carrier. *Plant Physiol Biochem.* 2000;38(3):177-185



## Perspectives

- Manuscript to be soon submitted
- Rules will be applied in the V2 version of the annotation of the 12X.2 version of the genome (S. Rombauts)

## Update on the IGGP

- General Assembly made at the Grapevine Physiology and Biotechnology conference, La Serena, Chile, April 2013
- New chair : A-F Adam-Blondon
- New deputy chair : Mario Pezzotti and Laurent Deluc
- Modification of the rest of the steering Committee

[www.vitaceae.org](http://www.vitaceae.org)