

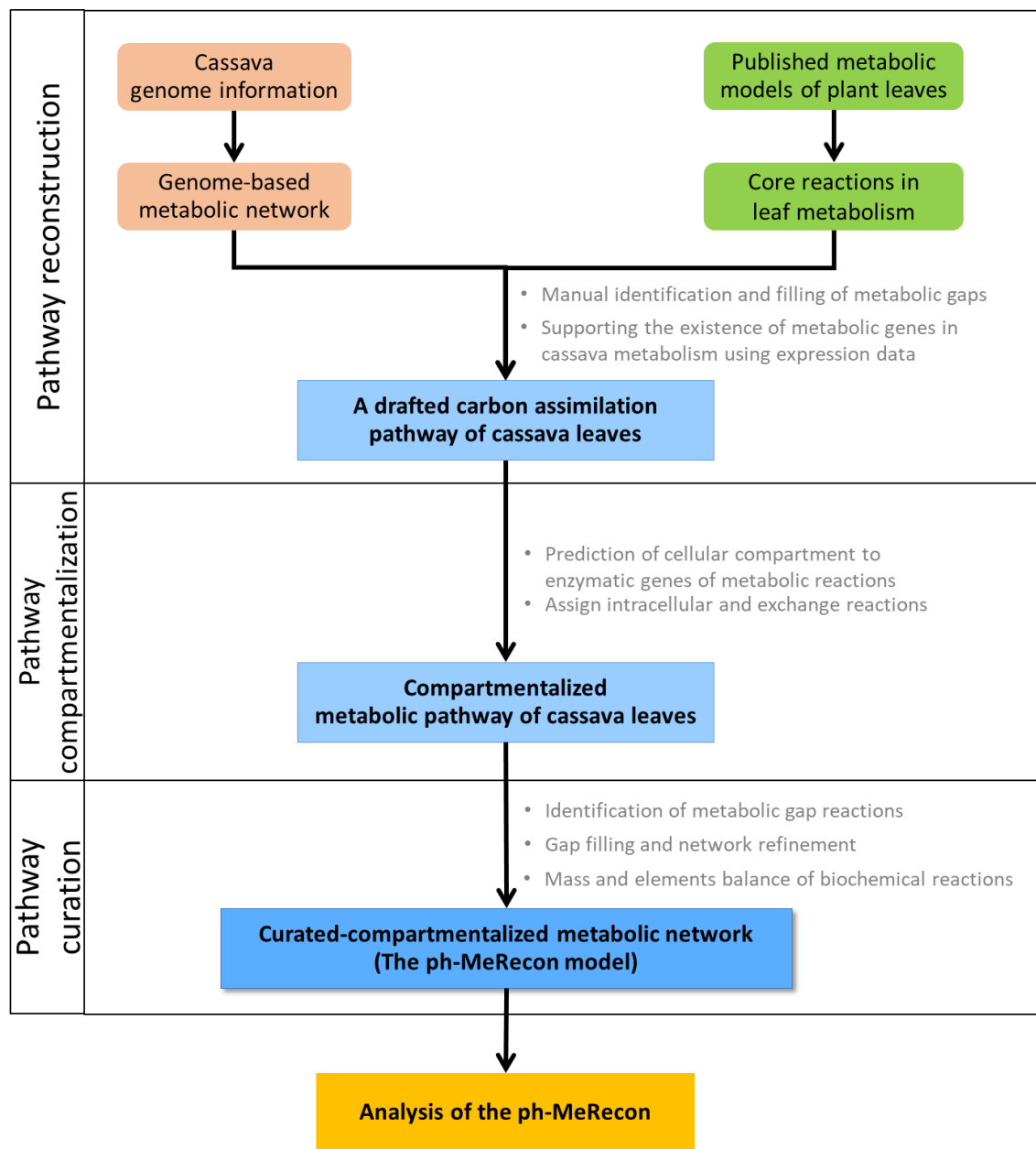
## Development of a compartmentalized model for insight into the structured metabolic pathway of carbon metabolism in cassava leaves

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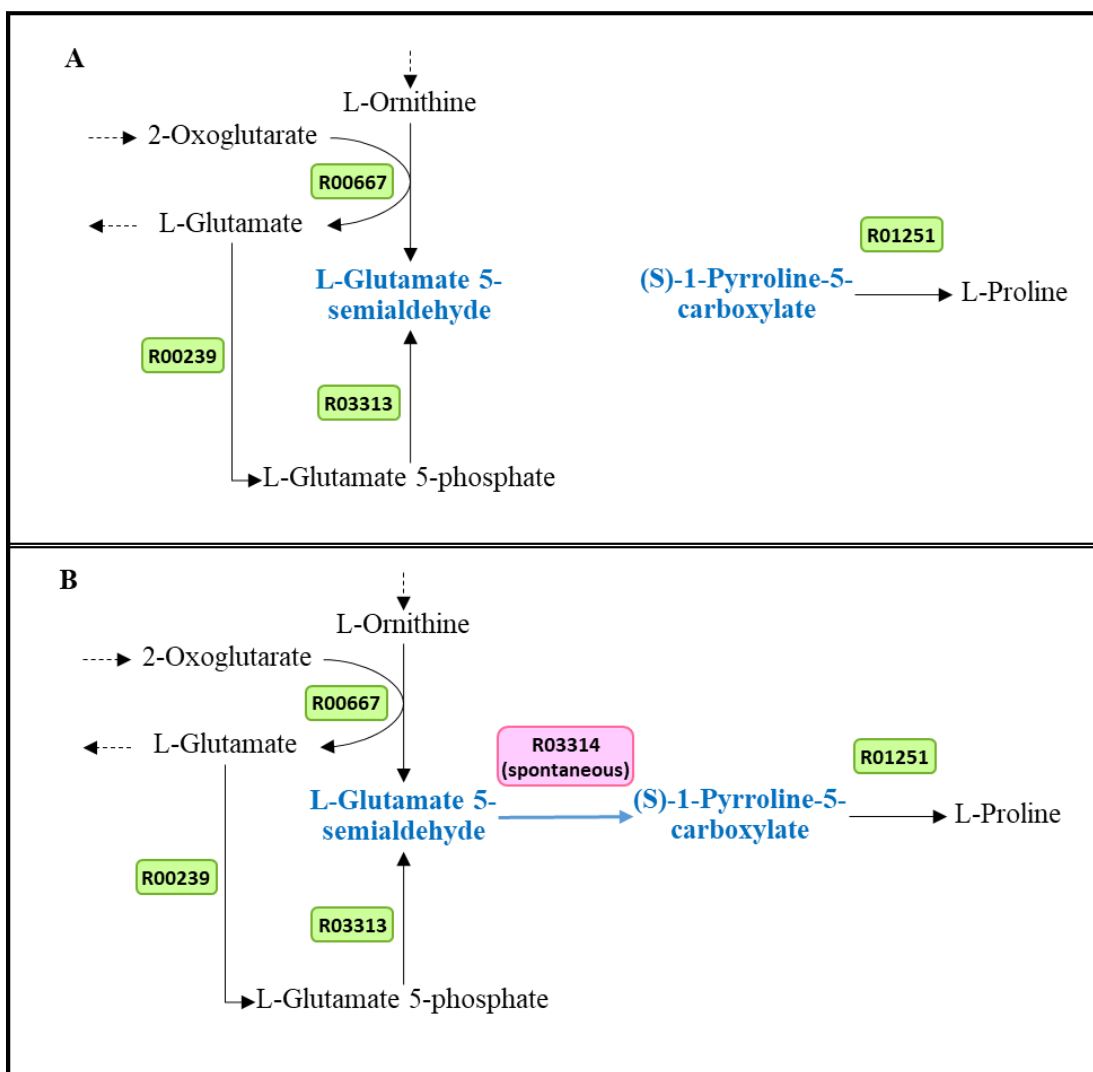
### Supplementary data 1. List of abbreviations

KEGG	Kyoto Encyclopedia of Genes and Genomes;
PMN	Plant Metabolic Network database;
ph-MeRecon	photosynthetic-Manihot esculenta metabolic pathway reconstruction
TCA	Tricarboxylic acid cycle
PPP	Pentose Phosphate Pathway
PSI	Photosystem I
PSII	Photosystem II
LEF	Linear electron flow
CEF	Cyclic electron flow
Cyt b6f	Cytochrome b6f complex
FNR	Ferredoxin-NADP+ reductase
PEPC	Phosphoenolpyruvate carboxylase enzyme;
RuBisCO	Ribulose-1,5 bisphosphate carboxylase/oxygenase enzyme
2-PG	2-Phosphoglycolate
G3P	Glycerate 3-phosphate
OAA	Oxaloacetate
Pi	Orthophosphate
PEP	Phosphoenolpyruvate
RuBP	Ribulose-1,5 bisphosphate
PQ	Plastoquinone
PQH2	Plastoquinol

PC	Plastocyanin
Fd	Ferredoxin
AMI	Amino acid metabolism
AMIO	Metabolism of other amino acids
BUT	Butanoate metabolism
CAL	Calvin cycle (carbon fixation)
CEL	Cell wall metabolism
COF	Cofactors and vitamin metabolism
FAT	Fatty acid metabolism
GABA	GABA shunt pathway
GLYC	Glycan metabolism
GLYO	Glyoxylate and dicarboxylate metabolism
NIT	Nitrogen metabolism
NUC	Nucleotide metabolism
PHO	Photosynthesis light reactions
PRES	Photorespiration pathway
PRO	Propanoate metabolism
RES	Respiration pathway
SEC	Secondary metabolism
STA	Starch metabolism
SUC	Sucrose metabolism
SUL	Sulfur metabolism
TER	Metabolism of terpenoids and polyketides.



**Fig S1.** The overall workflow of ph-MeRecon pathway construction and analysis.



**Fig S2.** Example of gap filling process for (S)-1-Pyrroline-5-carboxylate and L-glutamate 5-semialdehyde in proline biosynthesis pathway before (A) and after (B) network refinement. The gap metabolites are marked in blue. Blue arrow shows the added gap reaction with the KEGG reaction ID (pink rectangle). The KEGG reaction IDs of reactions (black arrows) are noted in green rectangle.