

Functional analysis of long intergenic non-coding RNAs in phosphate-starved rice using competing endogenous RNA network

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The background features several overlapping geometric shapes: a grey triangle on the left, a large blue triangle in the center, a large orange triangle on the right, and a smaller orange triangle at the bottom right. The overall style is modern and abstract.

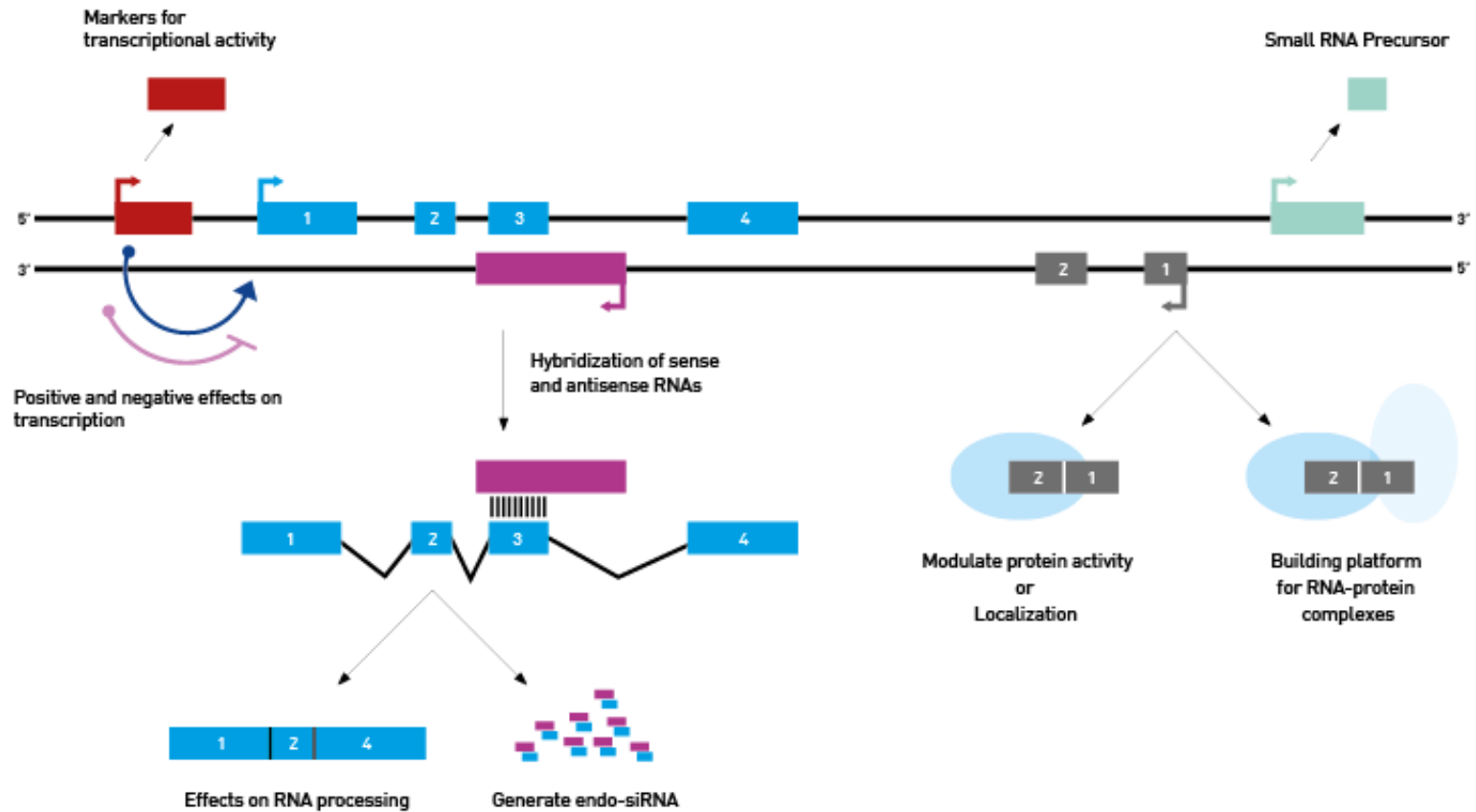
lncRNA

长度大于200个核苷酸，不具有编码蛋白能力

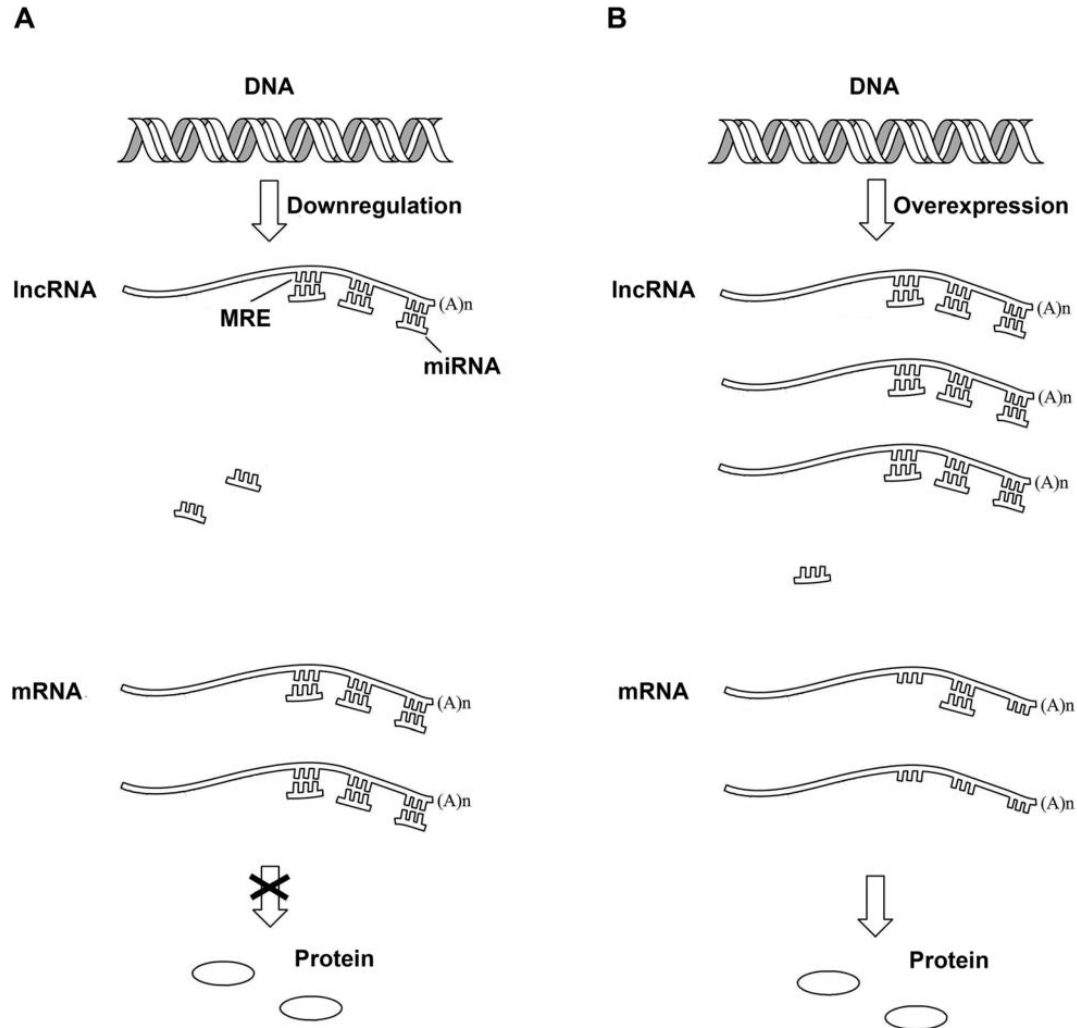
类似mRNA，具有5'帽子结构和3'polyA尾巴

参与细胞内的转录调控，大多数功能未知

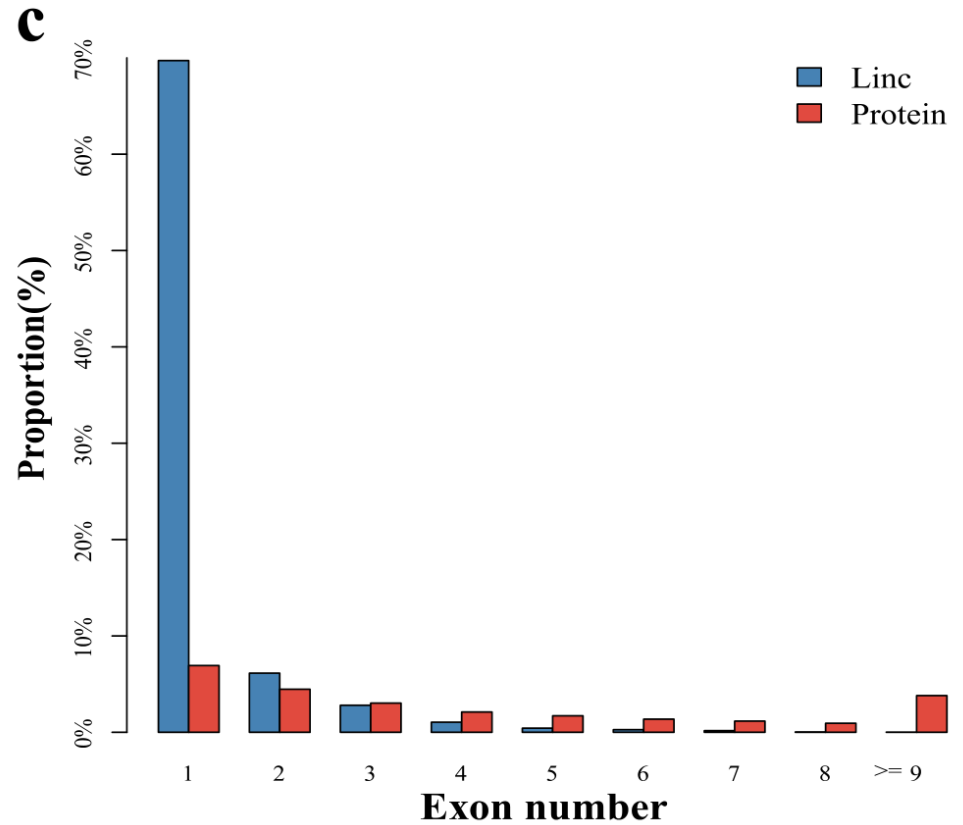
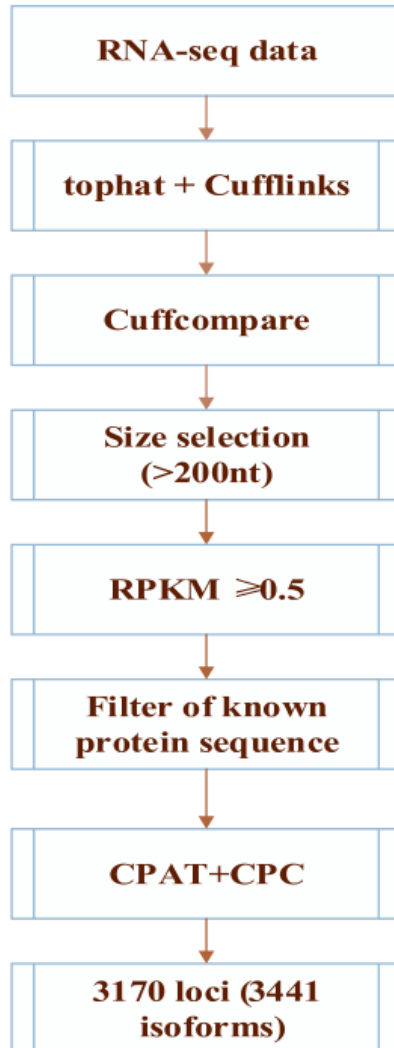
mechanism



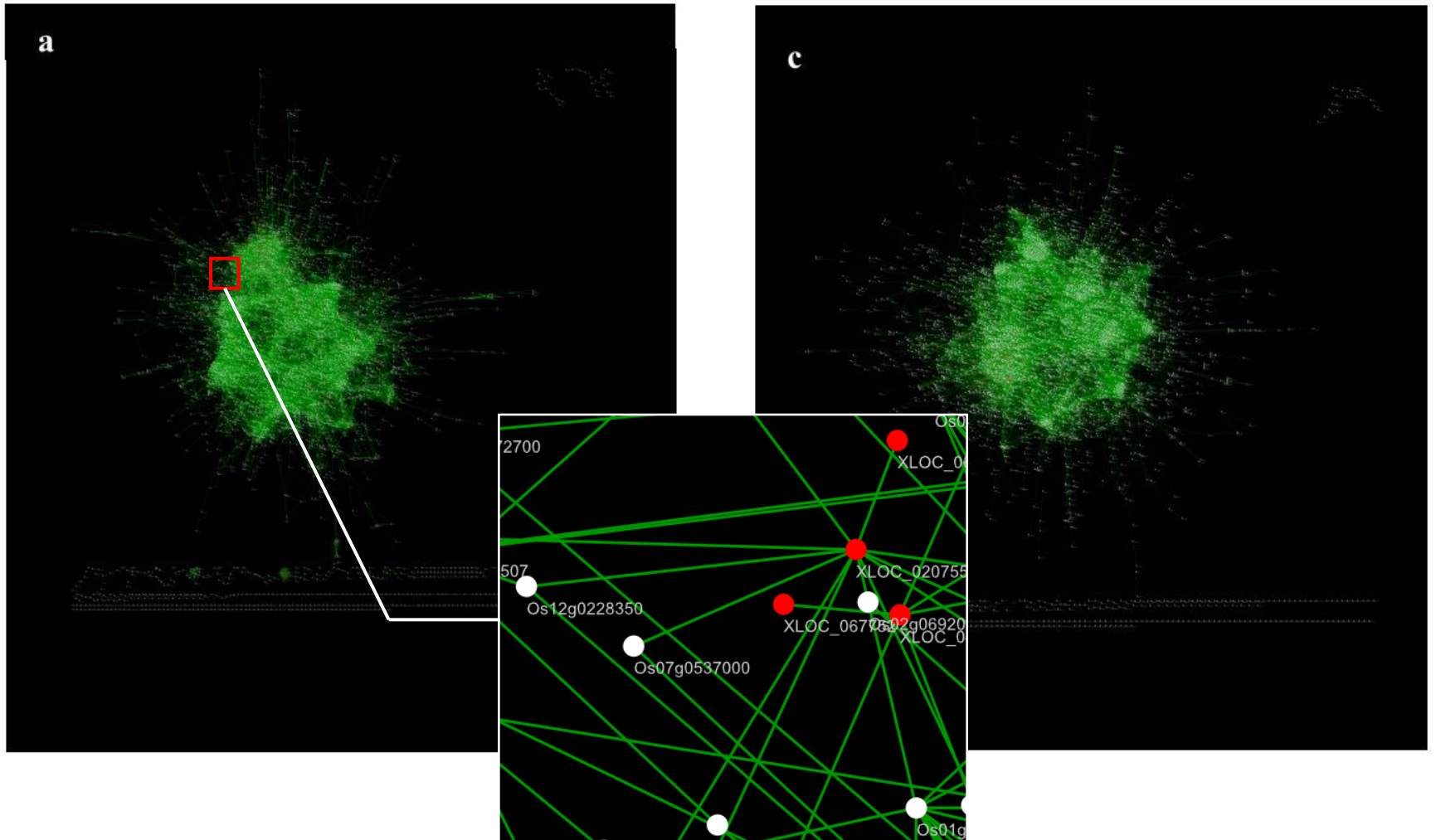
In molecular biology, **competing endogenous RNAs** (abbreviated **ceRNAs**) regulate other RNA transcripts by competing for shared microRNAs. (Pandolfi PP, 2011)



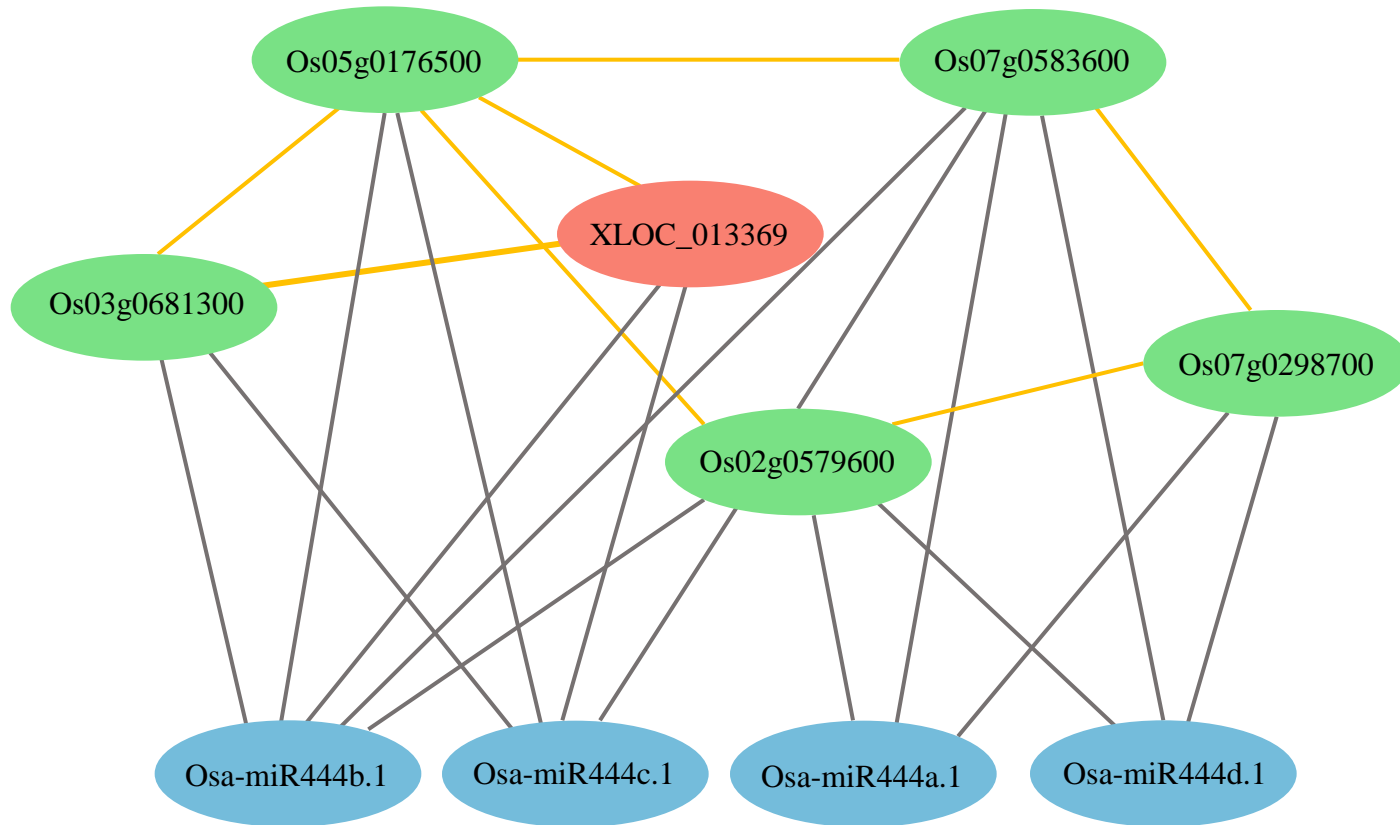
method



ceRNA network



ceRNA network

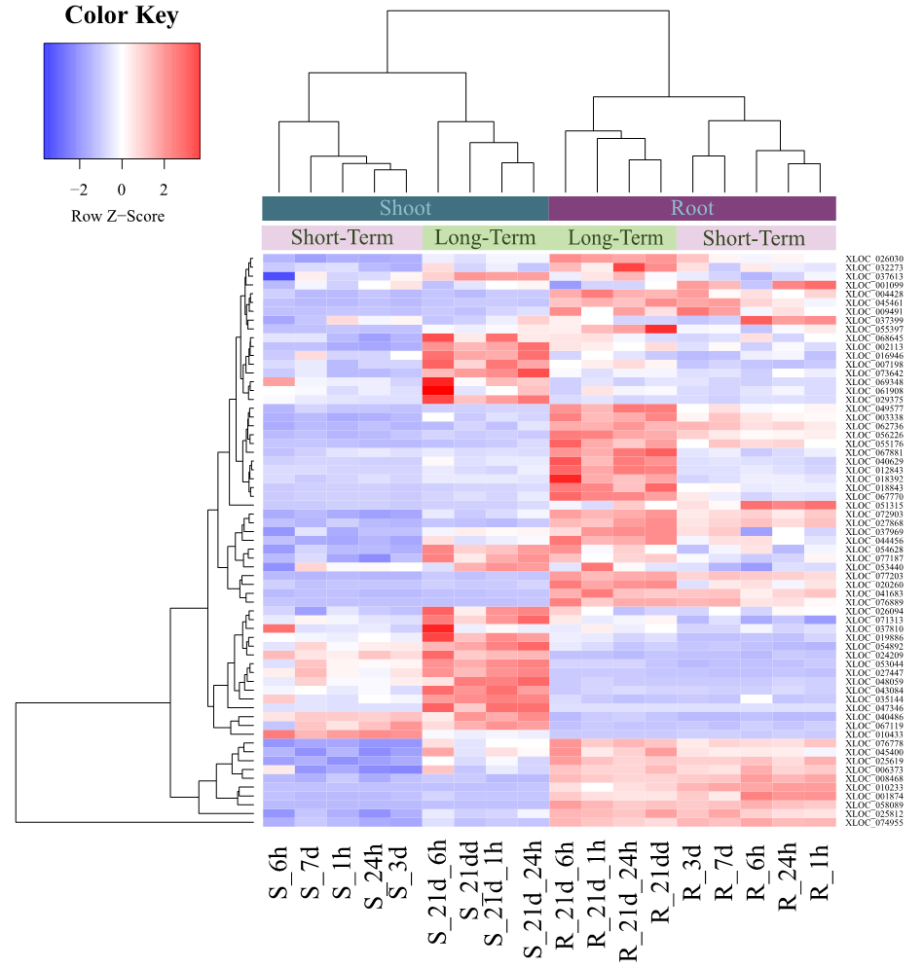
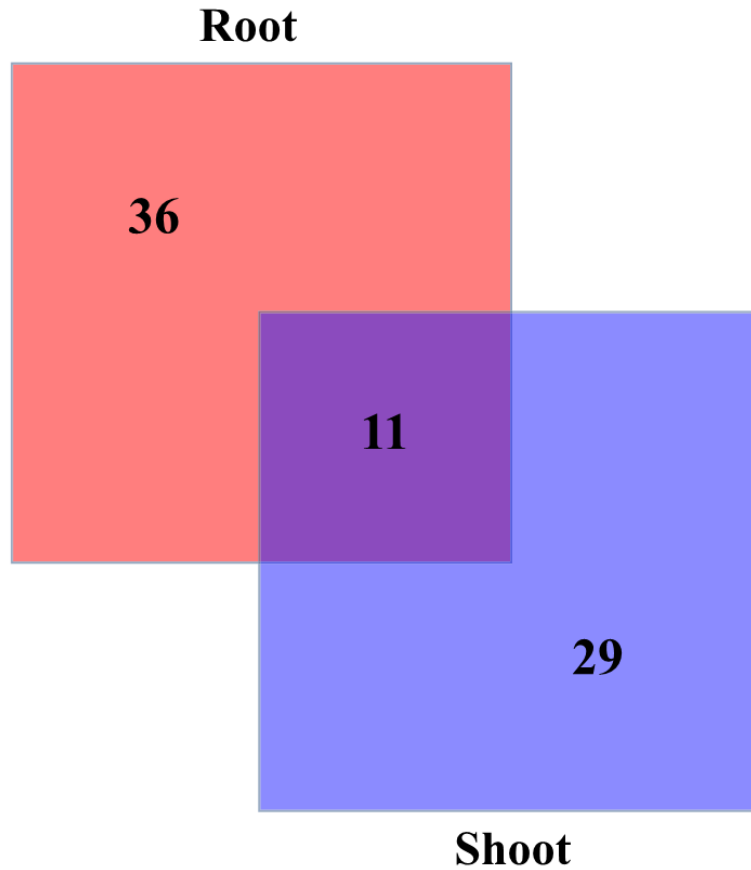


GO enrichment analysis

LincRNAs	Degree	GO ID	GO name
XLOC_026030	60	GO: 0016036	cellular response to phosphate starvation
XLOC_051315	51	GO: 0016036	cellular response to phosphate starvation
XLOC_010233	48	GO: 0016036	cellular response to phosphate starvation
XLOC_054628	28	GO: 0016036	cellular response to phosphate starvation
XLOC_049577	114	GO: 0009250	glucan biosynthetic process
XLOC_030698	56	GO: 0006848	pyruvate transport
XLOC_032273	55	GO: 0006848	pyruvate transport
XLOC_067770	47	GO: 0006848	pyruvate transport
XLOC_026516	40	GO: 0006848	pyruvate transport
XLOC_040629	39	GO: 0006848	pyruvate transport
XLOC_025619	31	GO: 0090322	regulation of superoxide metabolic process
XLOC_059443	40	GO: 0002237	response to molecule of bacterial origin
XLOC_008468	26	GO: 0002237	response to molecule of bacterial origin
XLOC_056226	33	GO: 0080150	S-adenosyl-L-methionine: benzoic acid carboxyl methyl transferase activity
XLOC_049097	28	GO: 0000124	SAGA complex
XLOC_001874	52	GO: 0005774	vacuolar membrane
XLOC_004428	45	-	-
XLOC_012843	31	-	-

Table 1. The Key LincRNAs in Root.

DE analysis



summary

亮点:

ceRNA网络最早是用于癌症研究，本文率先用来研究植物中lincRNAs的功能，为后续研究lincRNAs功能提供一个新思路。

不足:

1) 作为一篇主要运用生物信息学方法的文章，对预测得到的lincRNAs的功能缺乏必要的实验验证。

2) 植物中ceRNA，又被称为etm，在作为microRNA靶标进行互补配对时，需要有严格的3bp的错配，本文可能是基于数据量的原因，并没有采用较严格的筛选条件。

Thank you !