

表 1 木质素生物合成相关基因的研究进展

Table 1 Recent advance in study of lignin biosynthesis gene

基因 Gene	转基因植物 Transgenic plant	方法 Method	木质素含量 Lignin content	木质素组分 Lignin constituents	文献 Ref.
PAL	烟草	反义抑制	下降		Reddy et al., 2000
	<i>Tobacco</i>	Antisense	Decreased		
TAL	烟草	共抑制	下降	S/G 增加	Sewalt et al., 1997
	<i>Tobacco</i>	Sence	Decreased	Increased S/G	
C4H	烟草	共抑制	下降	S/G 下降	薛永常等, 2003
	<i>Tobacco</i>	Sence	Decreased	Increased S/G	Xue et al., 2003
C3H	杨树	共抑制	下降	S/G 下降	Chen et al., 2007
	<i>Poplar</i>	Sence	Decreased	Decreased S/G	Hu et al., 1999
F5H	烟草	反义抑制	下降	S/G 下降	Sewalt et al., 1997
	<i>Tobacco</i>	Antisense	Decreased	Decreased S/G	
4CL	杨树	共抑制	下降		聂会忠等, 2008
	<i>Poplar</i>	Sence	Decreased		Nie et al., 2008
COMT	毛竹	共抑制	下降	S,G 均下降	杨学文等, 2009
	<i>PhrUostachys edulis</i>	Sence	Decreased	Decreased S/G	Yang et al., 2009
HCT	拟南芥	突变体	下降	S,G 均下降	Franke et al., 2002
	<i>Arabidopsis thaliana</i>		Decreased	Decreased S/G	
CCoAOMT	拟南芥、烟草与杨树	共抑制	不变	S/G 增加	付月等, 2006
	<i>Arabidopsis thaliana</i> <i>Tobacco and Poplar</i>	Sence	Unchange	Increased S/G	Fu et al.,2006
COMT	毛白杨	共抑制	下降		贾彩红等, 2004
	<i>PopulustomentosaCarr</i>	Sence	Decreased		Jia et al., 2004
HCT	烟草	共抑制	下降		梁海泳等, 2006
	<i>Tobacco</i>	Sence	Decreased		Liang et al., 2006
COMT	杨树	反义抑制	下降	S,G 均下降	HU et al., 1999
	<i>Poplar</i>	Antisense	Decreased	Decreased S,G	
COMT	烟草	共抑制	下降	S/G 下降	Lu et al., 2004
	<i>Tobacco</i>	Sence	Decreased	Decreased S/G	
COMT	紫花苜蓿	共抑制	下降		Shadle et al., 2007
	<i>Medicago sativa</i>	Sence	Decreased		
COMT	拟南芥	共抑制	下降	S/G 降低	Goujon et al., 2003
	<i>Arabidopsis thaliana</i>	Sence	Decreased	Decreased S/G	
COMT	杨树	共抑制	不变		Jouanin et al., 2000
	<i>Poplar</i>	Sence	Unchange		
COMT	杨树	反义抑制	不变	S/G 降低	Lapierre et al., 1999
	<i>Poplar</i>	Antisense	Unchange	Decreased S/G	
COMT	烟草	反义抑制	下降	S,G 均下降	Sewalt et al., 1997
	<i>Tobacco</i>	Antisense	Decreased	Decreased S,G	
COMT	烟草	反义抑制	下降	S/G 增加	黄春琼等, 2008
	<i>Tobacco</i>	Antisense	Decreased	Increased S/G	Huang et al., 2008
COMT	苜蓿	共抑制	下降	S/G 增加	Guo et al., 1998
	<i>Alfalfa</i>	Sence	Decreased	Increased S/G	
COMT	杨树	共抑制	下降	S/G 增加	Meyermans et al., 2000
	<i>Poplar</i>	Sence	Decreased	Increased S/G	
COMT	杨树	反义抑制	下降	S/G 增加	Zhong et al., 2000
	<i>Poplar</i>	Antisense	Decreased	Increased S/G	
COMT	烟草	反义抑制	下降		Zhong et al., 1998
	<i>Tobacco</i>	Antisense	Decreased		

续表 1

Continuing table 1

基因 Gene	转基因植物 Transgenic plant	方法 Method	木质素含量 Lignin content	木质素组分 Lignin constituents	文献 Ref.
CCR	杨树 <i>Poplar</i>	共抑制 Sence	下降 Decreased		赵文超等(2009), Zhao et al., 2009
	烟草 <i>Tobacco</i>	反义抑制 Antisense	下降 Decreased	S/G 增加 Increased S/G	Piqemal et al., 1998
	拟南芥 <i>Arabidopsis thaliana</i>	突变体			Jones et al., 2001
CAD	烟草 <i>Tobacco</i>	共抑制 Sence		S/G 降低 Decreased S/G	Halpin et al., 1994
	苜蓿 <i>Alfalfa</i>	反义抑制 Antisense	不变 Unchange	S/G 降低 Decreased S/G	Baucher et al., 1999
	玉米 <i>Zea mays</i>	突变体	下降 Decreased	S,G 均下降 Decreased S,G	Halpin et al., 1998
POD	杨树 <i>Poplar</i>	增强 Increased	下降 Decreased		Zwliha et al., 1999
	竹笋 <i>bamboo shoots</i>	增强 Increased	下降 Decreased		吴晓丽等, 2008 Wu et al., 2008
	烟草 <i>Tobacco</i>	反义抑制 Antisense	下降 Decreased	S/G 增加 Increased S/G	Zhong et al., 1998