

The Electronic Plant Gene Register

Plant Gene Register titles for PGR 98–087 to PGR 98–112 appear below. The sequences have been deposited in GenBank and the articles listed online through the World Wide Web.

To cite an electronic Plant Gene Register article as a bibliographic reference, follow the style given below:

Brandenburg SA, Williamson CL, Slocum RD (1998) Characterization of a cDNA encoding the small subunit of Arabidopsis carbamoyl phosphate synthetase (accession no. U73175) (PGR 98–087). *Plant Physiol* **117**: 717.

To access the Plant Gene Register through the World Wide Web, use the URL:

<http://www.tarweed.com/pgr/>

Plant Gene Register PGR 98–087

Characterization of a cDNA Encoding the Small Subunit of Arabidopsis Carbamoyl Phosphate Synthetase (Accession No. U73175).

Sheri A. Brandenburg, Cynthia L. Williamson, and Robert D. Slocum*.

Department of Biological Sciences, Goucher College, Baltimore, Maryland 21204–2794.

* Corresponding author; e-mail bslocum@goucher.edu; fax 1–410–337–6508.

State University, Baton Rouge, Louisiana 70803 (F.T., D.S.S.).

* Corresponding author; e-mail ftang@nola.srrc.usda.gov; fax 1–504–286–4296.

Plant Gene Register PGR 98–088

Molecular Cloning and Sequencing of a Broccoli cDNA (Accession No. AF047476) Encoding an ETR-Type Ethylene Receptor.

Hsiu-Hui Chen, Yee-Yung Charng, Shang Fa Yang, and Jei-Fu Shaw*.

Institute of Botany, Academia Sinica, Nankang, Taipei, Taiwan 11529, Republic of China.

* Corresponding author; e-mail boplshaw@ccvax.sinica.edu.tw; fax 886–2–27827954.

Plant Gene Register PGR 98–090

Nucleotide Sequence of a cDNA Clone (Accession No. AF047694) for Glutaredoxin from *Aleurites fordii* Seeds.

Fuqiang Tang*, John M. Dyer, Alan R. Lax, Ding S. Shih, Dorselyn C. Chapital, and Armand B. Pepperman.

Southern Regional Research Center, United States Department of Agriculture, 1100 Robert E. Lee Blvd., New Orleans, Louisiana 70124 (F.T., J.M.D., A.R.L., D.C.C., A.B.P.); and Department of Biochemistry, Louisiana State University, Baton Rouge, Louisiana 70803 (F.T., D.S.S.).

* Corresponding author; e-mail ftang@nola.srrc.usda.gov; fax 1–504–286–4419.

Plant Gene Register PGR 98–089

cDNA Cloning of Aquaporin (Accession No. AF047173) from *Aleurites fordii* Seeds.

Fuqiang Tang*, John M. Dyer, Alan R. Lax, Ding S. Shih, Dorselyn C. Chapital, and Armand B. Pepperman.

Southern Regional Research Center, United States Department of Agriculture, 1100 Robert E. Lee Blvd., New Orleans, Louisiana 70124 (F.T., J.M.D., A.R.L., D.C.C., A.B.P.); and Department of Biochemistry, Louisiana

Plant Gene Register PGR 98–091

Isolation of a Novel Gene Coding for a Putative Arginine/Serine-Rich Splicing Factor Homologous to PR264/SC35 (Accession No. Y16672) from Alfalfa.

F. Frugier, A. Kondorosi*, and M. Crespi.

Institut des Sciences Végétales-Centre National de la Recherche Scientifique, 1 Avenue de la terrasse, 91198 Gif sur Yvette, France.

* Corresponding author; e-mail kondorosi@isv.cnrs-gif.fr; fax 33–1–69–82–36–95.

Plant Gene Register PGR 98–092

Ribosomal Protein L24 Homolog (Accession No. AJ225027) Is Expressed in *Cicer arietinum* L. Epicotyls.

Rocío Esteban, Emilia Labrador*, and Berta Dopico.
Departamento de Fisiología Vegetal, Facultad de Biología,
Universidad de Salamanca, E-37007, Salamanca, Spain.

* Corresponding author; e-mail labrador@gugu.usal.es; fax
34-23-294682.

Plant Gene Register PGR 98-093

Sequence and Transcript Editing of the *ndhB* Gene of Arabidopsis Plastids (Accession Nos. AJ002490 and AJ002491).

Eva M. Del Campo, Federico Albertazzi, Regina Freyer, Rainer M. Maier, Bartolomé Sabater, and Mercedes Martin*.

Departamento de Biología Vegetal (Fisiología Vegetal), Universidad de Alcalá, Alcalá de Henares, 28871 Madrid, Spain (E.M.D.C., B.S., M.M.); and Institut für Biologie III, Universität Freiburg Schanzlestrasse 1, 79104 Freiburg, Germany (F.A., R.F., R.M.M.).

* Corresponding author; e-mail bvmmm@bioveg.alcala.es; fax 34-1-885-5066.

Plant Gene Register PGR 98-094

An Auxin Down-Regulated mRNA from Mung Bean Hypocotyl (Accession No. AB012110) Is Related to an Aluminum-Inducible mRNA in Wheat Root.

Hiroshi Hashimoto and Kotaro T. Yamamoto*.

Division of Biological Science, Graduate School of Environmental Earth Science, Hokkaido University, Sapporo, 060-0810 Japan.

* Corresponding author; e-mail kty@ees.hokudai.ac.jp; fax 81-11-706-2253.

Plant Gene Register PGR 98-095

Cloning and Characterization of Two Different cDNAs Coding for Cytoplasmic Small Heat Stress Proteins (Accession Nos. AJ225046 and AJ225047) in *Lycopersicon peruvianum*.

Christoph Forreiter* and Daniela Löw.

Department of Molecular Cell Biology, Goethe University, Marie-Curie-Strasse 9, D60439 Frankfurt am Main, Germany.

* Corresponding author; e-mail forreiter@cellbiology.uni-frankfurt.de; fax 49-69-79829286.

Plant Gene Register PGR 98-096

PHR2: A Novel Arabidopsis Gene Related to the Blue-Light Photoreceptor/Photolyase Family (Accession No. AF053366).

Margaret Ahmad*, Jose A. Jarillo, and Anthony R. Cashmore.

Plant Science Institute, University of Pennsylvania, Philadelphia, Pennsylvania 19104.

* Corresponding author; e-mail mahmad@sas.upenn.edu; fax 1-215-898-8780.

Plant Gene Register PGR 98-097

The Primary Structure of the Cl⁻-Translocating ATPase, a Subunit (Accession No. AB012085) of *Acetabularia acetabulum*.

Mikiko Ikeda*, Chie Moritani-Otsuka, Hiromi Kadowaki, Toshitaka Ohhashi, Shinji Ohmori, Friedrich Lottspeich, and Dieter Oesterhelt.

Faculty of Health and Welfare Science, Okayama Prefectural University, Kuboki 111, Soja 719-1197, Japan (M.I., C.M.-O., H.K.); Department of Molecular Biology and Biochemistry, Okayama University Medical School, Shikata-cho 2-7-1, Okayama 700, Japan (T.O.); Faculty of Pharmaceutical Sciences, Okayama University, Tsushima-Naka-1, Okayama 700, Japan (S.O.); and Max Planck Institute of Biochemistry, Am Klopferspitz 18a, D-82152 Martinsried, Germany (F.L., D.O.).

* Corresponding author; e-mail mikeda@fhw.oka-pu.ac.jp; fax 81-866-94-2152.

Plant Gene Register PGR 98-098

Isolation of a *Eucalyptus globulus* cDNA Encoding Caffeyol-Coenzyme A 3-O Methyltransferase (Accession No. AF046122).

Linda E. De Melis, Filippa Brugliera, Silvia Pongracic, and Trevor W. Stevenson*.

Department of Applied Biology and Biotechnology, RMIT, G.P.O. Box 2476V, Melbourne, Australia 3001 (L.E.D.M., T.W.S.); Florigene Ltd., 16 Gipps Street, Collingwood, Victoria, Australia 3066 (F.B.); and Australian Paper Plantations Pty. Ltd., P.O. Box 220, Morwell, Victoria, Australia 3840 (S.P.).

* Corresponding author; e-mail trevor@rmit.edu.au; fax 61-3-9662-3421.

Plant Gene Register PGR 98-099

Nucleotide Sequence of *Atdrm1-1* cDNA and Genomic Clones (Accession Nos. AF053746 and AF053747), an Arabidopsis Homolog of a Dormant, Bud-Associated Gene from Pea.

Joel P. Stafstrom*, Michael T. Krueger, and William Stoudt.
Plant Molecular Biology Center, Department of Biological Sciences, Northern Illinois University, DeKalb, Illinois 60115.

* Corresponding author; e-mail stafstrom@niu.edu; fax 1-815-753-0461.

Plant Gene Register PGR98-092

Rocío Esteban, Emilia Labrador and Berta Dopico (1998) Ribosomal Protein L24 Homologue (Accession No. AJ225027) is Expressed in *Cicer arietinum* L. epicotyls. (PGR98-092) Plant Physiol. 117: 717

Ribosomal Protein L24 Homologue (Accession No. AJ225027) is Expressed in *Cicer arietinum* L. epicotyls

Rocío Esteban, Emilia Labrador and Berta Dopico

Departamento de Fisiología Vegetal, Facultad de Biología, Universidad de Salamanca, E-37007, Salamanca, Spain.

Corresponding author: Emilia Labrador
FAX: 34-23-294682
E-mail: labrador@gugu.usal.es

The structure and function of ribosomes depend upon the cooperative association and interaction of proteins and rRNA. Eukaryotic ribosomes are composed of a large subunit of 60S and a small subunit of 40S. The large subunit contains three rRNAs (5S, 28S and an rRNA unique to eukaryotes 5.8S rRNA) and 50 proteins, L1 to L50. The small subunit contains proteins S1-S33 and a 18S rRNA. The structure of the components in the ribosomes have been studied for long time in *E. coli*, *S. cerevisiae* and mammals, as reviewed by Hill *et al.* (1990). Ribosomal proteins in plants have not been dealt with in great detail and are mainly recognised by the similarity to proteins from bacteria and yeast.

We report here the nucleotide sequence of a cDNA encoding a ribosomal protein L24 homologue. This full length clone was picked out of a cDNA library in lambda-ZAP constructed from poly A+ RNA from epicotyls separated from 5 day old chickpea (*Cicer arietinum* L. cv castellana) seedlings growing in water. The clone (CanRL24) is 687 bp in length, including a complete ORF of 495 bp, 26 bp 5' untranslated sequence and 166-bp 3' untranslated sequence. The deduced protein is 165 amino acids in length from which the Mr can be calculated to 18,499 dalton. The estimated PI of 10.8 reflects that the chickpea RL24 homologue contains more than 21 % lysine and 13% arginine residues.

Nucleotide and amino acid sequence comparisons to published sequences in GenBank and EMBL data bases and Swiss-Prot and Blitz data bases respectively indicate that chickpea RL24 show high identity to the two only plant sequenced ribosomal protein RL24 homologue. The identity to barley 60S ribosomal protein RL24 (X94296) (Rasmussen and Klausen, 1996) is 82,7% and to Arabidopsis RL24 (P38666) is 73%. Similar identity was found in the Medicago EST (AA660502) databases, defined as 60S ribosomal protein. Also chickpea RL24 present lower homology to yeast RL30B and to yeast RL30A (Mitra and Warner, 1984; Baronas-Lowell and Warner, 1990).

Acknowledgements

This research was supported by a grant from the Dirección General de Investigación Científica y Técnica (DGICYT), Spain (PB94-1395).

Literature cited

Baronas-Lowell DM, Warner JR (1990) Ribosomal Protein L30 is dispensable in the yeast *Saccharomyces cerevisiae*. Mol Cell Biol. 10: 5235-5243

Hill WE, Dahlbeg A, Garret RA, Moore PB, Schlessinger D, Warner JR (1990) The Ribosome: structure, function and evolution. Amer. Soc. Microbiol., Washington, D.C.

Mitra G, Warner JR (1984) A yeast ribosomal protein gene whose intron is in the 5' leader. J Biol

Rasmussen SK, Klausen J (1996) Ribosomal protein L24E homologue (Accession No. X94296) is expressed in barley endosperms (PGR96-011). Plant Physiol. 110: 1048



[Return to Plant Gene Register Index](#)



[Return to Plant Physiology ONLINE](#)

The structure and function of ribosomes depend upon the cooperative association and interaction of proteins and rRNA. Eukaryotic ribosomes are composed of a large subunit of 60S and a small subunit of 40S. The large subunit contains three rRNAs (28S, 5.8S and an rRNA unique to eukaryotes 5.8S rRNA) and 30 proteins, L1 to L30. The small subunit contains proteins 21-23S and a 18S rRNA. The structure of the components in the ribosomes have been studied for long time in *E. coli*, *S. cerevisiae* and mammals, as reviewed by Hill et al. (1990). Ribosomal proteins in plants have not been dealt with in great detail and are mainly recognized by the similarity to proteins from bacteria and yeast.

We report here the nucleotide sequence of a cDNA encoding a ribosomal protein L24 homologue. This full length clone was picked out of a cDNA library in lambda-ZAP constructed from poly(A+ RNA from epicotyls separated from 5 day old chickpea (*Cicer arietinum* L. cv castellana) seedlings growing in water. The clone (c-arrL24) is 687 bp in length, including a complete ORF of 495 bp. 26 bp 5' untranslated sequence and 166 bp 3' untranslated sequence. The deduced protein is 165 amino acids in length from which the Mr can be calculated to 18499 dalton. The estimated pI of 10.8 reflects that the chickpea RL24 homologue contains more than 21% lysine and 13% arginine residues.

Nucleotide and amino acid sequence comparisons to published sequences in Genbank and EMBL data bases and Swiss-Prot and Bfly data bases respectively indicate that chickpea RL24 show high identity to the two only plant sequenced ribosomal protein RL24 homologue. The identity to barley 60S ribosomal protein RL24 (X94296) (Rasmussen and Klausen, 1996) is 82.7% and to Arabidopsis RL24 (F79666) is 73%. Similar identity was found in the Medicago EST (AA01301) databases, defined as 60S ribosomal protein. Also chickpea RL24 present lower homology to yeast R26B and to yeast RL30A (Mitts and Warner, 1984; Barona-Lowell and Warner, 1990).

Acknowledgements

This research was supported by a grant from the Dirección General de Investigación Científica y Técnica (DICYT), Spain (PB94-1395).

Literature cited

- Barona-Lowell DM, Warner JR (1990) Ribosomal Protein L30 is dispensable in the yeast *Saccharomyces cerevisiae*. Mol Cell Biol. 10: 5233-5243
- Hill WE, Dahlborg A, Garet RA, Moore PB, Schlessinger D, Warner JR (1990) The ribosome: structure, function and evolution. Amer. Soc. Microbiol., Washington, D.C.
- Mitts G, Warner JR (1984) A yeast ribosomal protein gene whose intron is in the 5' leader. J Biol