

1990


Sequence of EMB-1, an mRNA accumulating specifically in embryos of carrot

T. U. Ulrich
Sogetol, Inc., Hayward, CA

Eve Wurtele
Iowa State University, mash@iastate.edu

Basil Nikolau
Iowa State University, dimmas@iastate.edu

Follow this and additional works at: http://lib.dr.iastate.edu/bbmb_ag_pubs

 Part of the [Biochemistry, Biophysics, and Structural Biology Commons](#), [Botany Commons](#), and the [Food Science Commons](#)

The complete bibliographic information for this item can be found at http://lib.dr.iastate.edu/bbmb_ag_pubs/59. For information on how to cite this item, please visit <http://lib.dr.iastate.edu/howtocite.html>.

Sequence of EMB-1, an mRNA accumulating specifically in embryos of carrot

Abstract

We have screened a lambda gt10 cDNA library synthesized from poly A RNA isolated from carrot somatic embryos to identify genes whose expression was associated with embryogenesis. 200,000 recombinant phage were differentially hybridized with single-stranded, ³²P-labelled cDNA synthesized from poly A RNA isolated from callus cells (1) and from embryos (2) of *Daucus carota*. This screen identified EMB-1, an mRNA that uniquely accumulates in embryos. The derived amino acid sequence of this clone shows similarity to the Em protein of wheat (3) and the D19 mRNA and protein of cotton (4). These proteins are translated from Lea mRNAs, which accumulate to high levels in very late staged zygotic embryos of wheat and cotton, respectively (3, 5). This is the first report of a Lea protein of group 1(4) accumulating in somatic embryos.

Disciplines

Biochemistry, Biophysics, and Structural Biology | Botany | Food Science

Comments

This is an article from *Nucleic Acids Research* 18 (1990): 2826. Posted with permission.

Rights

This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Sequence of EMB-1, an mRNA accumulating specifically in embryos of carrot

T.U.Ulrich⁴, E.S.Wurtele^{1,3*}, B.J.Nikolau^{2,3}

¹Department of Botany, ²Department of Biochemistry and Biophysics, ³Department of Food Technology and Center for Crops Utilization Research, Iowa State University, Ames, IA 50011 and

⁴Sogetol, Inc., 3876 Bay Place Center, Hayward, CA 94545, USA

Submitted December 18, 1989

EMBL accession no. X17608

We have screened a lambda gt10 cDNA library synthesized from poly A RNA isolated from carrot somatic embryos to identify genes whose expression was associated with embryogenesis. 200,000 recombinant phage were differentially hybridized with single-stranded, ³²P-labelled cDNA synthesized from poly A RNA isolated from callus cells (1) and from embryos (2) of *Daucus carota*. This screen identified EMB-1, an mRNA that uniquely accumulates in embryos. The derived amino acid sequence of this clone shows similarity to the Em protein of wheat (3) and the D19 mRNA and protein of cotton (4). These proteins are translated from *Lea* mRNAs, which accumulate to high levels in very late staged zygotic embryos of wheat and cotton,

respectively (3, 5). This is the first report of a *Lea* protein of group 1(4) accumulating in somatic embryos.

REFERENCES

1. Wurtele, E.S., Keller, G.L., Nikolau, B.J. and Ulrich, Y.H. (1988) *J. Plant Physiol.* **132**, 683–689.
2. Keller, G.L., Nikolau, B.J., Ulrich, U.H. and Wurtele, E.S. (1988) *Plant Physiol.* **86**, 451–456.
3. Litts, J.C., Colwell, G.W., Chakerian, R.L. and Quatrano, R.S. (1987) *Nucl. Acids Res.* **15**, 3607–3618.
4. Dure, L., Crouch, M., Harada, J., Ho, D.U.-H., Mundy, J., Quatrano, R.L. and Thomas, U. (1989) *Plant Mol. Biol.* **12**, 475–486.
5. Hughes, D.W. and Galau, G.A. (1989) *Genes and Dev.* **3**, 358–369.

```

1   AUUUAGAAGAAAGCUAAG AUG GCG AGU CAA CAA GAG AAG AAG GAG CUG
49  GAU GCU AGG GCG AGG CAA GGA GAG ACC GUG GUU CCU GGC GGG ACU GGU
97  GGG AAG AGU CUU GAA GCC CAG CAG CAC CUU GCU GAA GGG AGG AGC AAA
145 GGA GGG CAG ACG AGG AAG GAG CAG CUG GGA GGG GAA GGG UAU CAU GAG
193 AUG GGA CGC AAG GGU GGU CUG AGC AAC AAC GAU AUG UCU GGC GGU GAG
241 CGC GCU GAG CAG GAA GGC AUU GAC AUC GAU GAG UCC AAG UUC AGG ACC
289 AAA AAG UGA UCA UGC CUA GCC CAC UUU ACU CAU GCA CCU AUC UAU CUA
337 GCU AUC UCU GCC UCA UGU AUC GUA UUU CCA CAG CUU CGU UUA GUG UGG
385 UUA UUA UCU GUG ACU AAG UCU AGU UAG UGU UAA GUC UAG UUG UUA CUG
433 GAA UAA CUA GAC UUA UAC UGG UUA UGU ACG GGU CUA UGU AUG UGU ACC
481 UAC UGG AAU AAA UAU GUG UUA UAU GUC UCA AGA AAAAAAAAAAAAAA

```

Figure 1. Nucleotide sequence of EMB-1, a carrot poly A RNA that accumulates specifically in embryos.