

[Skip to Main Content](#)

Login to your account

Email/Username

Password

 [Show](#)

[Forgot password?](#)

Remember me

[Log in](#)

Don't have an account?

[Create a Free Account](#)

If you don't remember your password, you can reset it by entering your email address and clicking the Reset Password button. You will then receive an email that contains a secure link for resetting your password

Email*

[Submit](#)

If the address matches a valid account an email will be sent to __email__ with instructions for resetting your password

[Cancel](#)

 Advertisement

 Lung Cancer

[Close](#)

- [Home](#)
- [Articles and Issues](#)
 - [Back](#)
 - [Articles in Press](#)
 - [Current Issue](#)
 - [List of Issues](#)
- [For Authors](#)
 - [Back](#)
 - [About Open Access](#)
 - [Author Information](#)
 - [Permissions](#)
 - [Researcher Academy](#)
 - [Submit a Manuscript](#)
- [Journal Info](#)
 - [Back](#)
 - [About Open Access](#)
 - [About the Journal](#)
 - [Abstracting/Indexing](#)
 - [Advertising Information](#)
 - [Career Opportunities](#)
 - [Contact Information](#)
 - [Editorial Board](#)
 - [Pricing](#)
 - [New Content Alerts](#)
- [Subscribe](#)

- [Society Info](#)
 - [Back](#)
 - [International Lung Cancer Consortium \(ILCCO\)](#)
 - [European Thoracic Oncology Platform \(ETOP\)](#)
 - [British Thoracic Oncology Group \(BTOG\)](#)
- [More Periodicals](#)
 - [Back](#)
 - [Find a Periodical](#)
 - [Go to Product Catalog](#)

Search for...

[Go search](#)

All Content

[Advanced Search](#)[Save search](#)

Please enter a term before submitting your search.

[Ok](#)

- [Submit Article](#)
- [Log in](#)
- [Register](#)
- [Log in](#)
 - [Submit Article](#)
 - [Log in](#)
- [Subscribe](#)
- [Claim](#)

Full length article| [Volume 34, ISSUE 1](#), P99-104, October 01, 2001

- [Purchase](#)
 - [Academic and Personal](#)
 - [Corporate R&D Professionals](#)
- [Subscribe](#)
- [Save](#)
 - [Add To Online Library](#)Powered By Mendeley
 - [Add To My Reading List](#)
 - [Export Citation](#)
 - [Create Citation Alert](#)
- [Share](#)

Share on

 - Email
 - Twitter
 - Facebook
 - Linked In
 - Sina Weibo
- [more](#)
 - [Reprints](#)
 - [Request](#)
- [Top](#)

Low titre autoantibodies against recoverin in sera of patients with small cell lung cancer but without a loss of vision

- [Alexandr V. Bazhin](#)

Alexandr V. Bazhin

Affiliations

Department of Enzymology, A.N. Belozersky Institute of Physico-Chemical Biology, Moscow State University, 119899 Moscow, Russia

[Search for articles by this author](#)

- [Olga N. Shifrina](#)

Olga N. Shifrina

Affiliations

Pulmonology Research Institute, Ministry of Public Health of Russian Federation, 105077 Moscow, Russia

[Search for articles by this author](#)

- [Marina S. Savchenko](#)

Marina S. Savchenko

Affiliations

Department of Enzymology, A.N. Belozersky Institute of Physico-Chemical Biology, Moscow State University, 119899 Moscow, Russia

[Search for articles by this author](#)

- [Natalya K. Tikhomirova](#)

Natalya K. Tikhomirova

Affiliations

Department of Enzymology, A.N. Belozersky Institute of Physico-Chemical Biology, Moscow State University, 119899 Moscow, Russia

[Search for articles by this author](#)

- [Maria A. Goncharskaia](#)

Maria A. Goncharskaia

Affiliations

Laboratory of Immunochemistry, Institute of Carcinogenesis, N.N. Blokhin Cancer Research Centre, Academy of Medical Sciences of Russia, 115478 Moscow, Russia

[Search for articles by this author](#)

- [Vera A. Gorbunova](#)

Vera A. Gorbunova

Affiliations

Department of Chemotherapy, N.N. Blokhin Cancer Research Centre, Academy of Medical Sciences of Russia, 115478 Moscow, Russia

[Search for articles by this author](#)

- [Ivan I. Senin](#)

Ivan I. Senin

Affiliations

Department of Enzymology, A.N. Belozersky Institute of Physico-Chemical Biology, Moscow State University, 119899 Moscow, Russia

[Search for articles by this author](#)

- [Alexandr G. Chuchalin](#)

Alexandr G. Chuchalin

Affiliations

Pulmonology Research Institute, Ministry of Public Health of Russian Federation, 105077 Moscow, Russia

[Search for articles by this author](#)

- [Pavel P. Philippov](#)

Pavel P. Philippov

Correspondence

Corresponding author. Tel.: +7-95-9395017; fax: +7-95-9390978

[Contact](#)

Affiliations

Department of Enzymology, A.N. Belozersky Institute of Physico-Chemical Biology, Moscow State University, 119899 Moscow, Russia

[Search for articles by this author](#)

DOI:[https://doi.org/10.1016/S0169-5002\(01\)00212-4](https://doi.org/10.1016/S0169-5002(01)00212-4)

[Low titre autoantibodies against recoverin in sera of patients with small cell lung cancer but without a loss of vision](#)

[Previous Article](#)[Pulmonary pleomorphic \(spindle\) cell carcinoma: peculiar clinicopathologic manifestations different from ordinary non-small cell carcinoma](#)

[Next Article](#)[Phase I/II trial of docetaxel and vinorelbine in patients with non-small cell lung cancer previously treated with platinum-based chemotherapy](#)



Advertisement

Abstract

To date, many authors have described the presence of autoantibodies against various neuronal proteins, paraneoplastic antigens (PNA), in a serum of patients with different kinds of malignant tumors located outside the nervous system. These autoantibodies may cross-react with the corresponding PNA or their epitopes present in neurons and thus initiate the development of a variety of neurological disorders, paraneoplastic syndromes (PNS), even though the primary tumor and its metastases have not invaded the nervous system. Cancer-associated retinopathy (CAR) is a rare ocular PNS induced by autoantibodies against several retinal antigens, one of which is a photoreceptor calcium-binding protein, recoverin. Only several CAR patients with a few kinds of cancer (endothelial carcinoma, breast cancer, epithelial ovarian carcinoma) have so far been found to contain autoantibodies against recoverin in their sera. As for lung cancer, the majority of CAR cases mediated by anti-recoverin autoantibodies have been revealed in patients with the most malignant lung cancer, small cell lung carcinoma (SCLC), and only one similar case has been described for a patient with non-small lung carcinoma. The common feature of all these anti-recoverin-positive patients, irrespective of the type of cancer, is the presence of both the CAR syndrome and high titres (as a rule, more than 1:1000) of the underlying autoantibodies in their serum. In this study, we have used recombinant myristoylated recoverin to screen serum samples of 50 patients with SCLC by Western blot and revealed 5 individuals with low titres of anti-recoverin antibodies, who have no manifestation of a loss of vision. To our knowledge, this is the first report on the presence of low titre autoantibodies against recoverin in a serum of patients with cancer, but without visual dysfunction.

Keywords

- [Small cell lung carcinoma](#)
- [Paraneoplastic neurological syndrome](#)
- [Autoimmune](#)
- [Cancer-associated retinopathy](#)
- [Paraneoplastic autoantigen](#)
- [Recoverin](#)

Abbreviations:

[CAR, cancer-associated retinopathy](#) (), [PNS, paraneoplastic neurological syndromes](#) (), [RAbs, anti-recoverin autoantibodies](#) (), [SCLC, small cell lung carcinoma](#) ()

To read this article in full you will need to make a payment

Purchase one-time access:

[Academic and Personal](#)[Corporate R&D Professionals](#)

► One-time access price info

Subscribe:

[Subscribe to Lung Cancer](#)

Already a print subscriber? [Claim online access](#)

Already an online subscriber? [Sign in](#)

Register: [Create an account](#)

Institutional Access: [Sign in to ScienceDirect](#)

References

1.
 - Gure A.O.
 - Stockert E.
 - Scanlan M.J.
 - et al.

Serological identification of embryonic neural proteins as highly immunogenic tumor antigens in small cell lung cancer.

Proc. Natl. Acad. Sci. USA. 2000; 97: 4198-4203

[View in Article](#)

- [Scopus \(193\)](#)
- [PubMed](#)
- [Crossref](#)
- [Google Scholar](#)

2.
 - Thirkill C.E.
 - Roth A.M.
 - Keltner J.L.

Cancer-associated retinopathy.

Arch. Ophthalmol. 1987; 105: 372-375

[View in Article](#)

- [Scopus \(204\)](#)
- [PubMed](#)
- [Crossref](#)
- [Google Scholar](#)

3.
 - Polans A.S.
 - Buczylko J.
 - Crabb J.
 - Palczewski K.

A photoreceptor calcium binding protein is recognized by autoantibodies obtained from patients with cancer-associated retinopathy.

J. Cell. Biol. 1991; 112: 981-989

[View in Article](#)

- [Scopus \(208\)](#)
- [PubMed](#)
- [Crossref](#)
- [Google Scholar](#)

4.
 - Dizhoor A.M.
 - Nekrasova E.R.
 - Philippov P.P.

A novel photoreceptor cell-specific protein with molecular weight 26 kDa capable of binding to immobilized delipidated rhodopsin.

Biokhimia (Moscow). 1991; 56: 225-229

[View in Article](#)

- [PubMed](#)
- [Google Scholar](#)

5.
 - Dizhoor A.M.
 - Ray S.
 - Kumar S.
 - et al.

Recoverin: a calcium sensitive activator of retinal rod guanylate cyclase.

Science. 1991; 251: 915-918

[View in Article](#)

- [Scopus \(466\)](#)
- [PubMed](#)
- [Crossref](#)
- [Google Scholar](#)

6. ○ Lambrecht H.-G.
○ Koch K.-W.

A 26 kd calcium binding protein from bovine rod outer segments as modulator of photoreceptor guanylate cyclase.

EMBO J. 1991; 10: 793-798

[View in Article](#)

- [PubMed](#)
- [Google Scholar](#)

7. ○ Flaherty K.M.
○ Zozulya S.
○ Stryer L.
○ McKay D.B.

Three-dimensional structure of recoverin, a calcium sensor in vision.

Cell. 1993; 75: 709-716

[View in Article](#)

- [Scopus \(224\)](#)
- [PubMed](#)
- [Abstract](#)
- [Full Text PDF](#)
- [Google Scholar](#)

8. ○ Polans A.S.
○ Witkowska D.
○ Haley T.L.
○ et al.

Recoverin, a photoreceptor-specific calcium-binding protein, is expressed by the tumor of a patient with cancer-associated retinopathy.

Proc. Natl. Acad. Sci. USA. 1995; 92: 9176-9180

[View in Article](#)

- [Scopus \(179\)](#)
- [PubMed](#)
- [Crossref](#)
- [Google Scholar](#)

9. ○ Adamus G.
○ Amundson D.
○ MacKay P.G.

Long-term persistence of anti-recoverin antibodies in endometrial cancer-associated retinopathy.

Arch. Ophthalmol. 1998; 116: 251-253

[View in Article](#)

- [PubMed](#)
- [Google Scholar](#)

10. ○ Klingele T.G.
○ Burde R.M.
○ Rappazzo J.A.
○ et al.

Paraneoplastic retinopathy.

J. Clin. Neuroophthalmol. 1984; 4: 229-245

[View in Article](#)

- [PubMed](#)
- [Google Scholar](#)

11. ○ Eltabbakh G.H.
○ Hoogerland D.L.

Paraneoplastic retinopathy associated with uterine sarcoma.

Gynecol. Oncol. 1995; 58: 120-123

[View in Article](#)

- [Scopus \(42\)](#)
- [PubMed](#)
- [Crossref](#)
- [Google Scholar](#)

12. ○ Matsubara S.
○ Yamaji Y.
○ Fujita T.
○ et al.

Cancer-associated retinopathy syndrome: a case of small cell lung cancer expressing recoverin immunoreactivity.

Lung Cancer. 1996; 14: 265-271

[View in Article](#)

- [Scopus \(26\)](#)
- [PubMed](#)
- [Abstract](#)
- [Full Text PDF](#)
- [Google Scholar](#)

13. ○ Thirkill C.E.
○ Keltner J.L.
○ Tyler N.K.
○ Roth A.M.

Antibody reactions with retina and cancer-associated antigens in 10 patients with cancer-associated retinopathy.

Arch. Ophthalmol. 1993; 111: 931-937

[View in Article](#)

- [Scopus \(100\)](#)
- [PubMed](#)
- [Crossref](#)
- [Google Scholar](#)

14. ○ Salgia R.
○ Hedges T.R.
○ Rizk M.
○ et al.

Cancer-associated retinopathy in a patient with non-small cell lung carcinoma.

Lung Cancer. 1998; 22: 149-152

[View in Article](#)

- [Scopus \(25\)](#)
- [PubMed](#)
- [Abstract](#)
- [Full Text](#)
- [Full Text PDF](#)
- [Google Scholar](#)

15. ○ Senin I.I.
○ Zargarov A.A.
○ Alekseev A.M.
○ et al.

N-Myristoylation of recoverin enhances its efficiency as an inhibitor of rhodopsin kinase.

FEBS Lett. 1995; 376: 87-90

[View in Article](#)

- [Scopus \(66\)](#)
- [PubMed](#)
- [Abstract](#)
- [Full Text PDF](#)
- [Google Scholar](#)

16. ○ Laemmli U.K.
Cleavage of structural proteins during the assembly of the head of bacteriophage T4.
Nature (London). 1970; 227: 680-688
[View in Article](#)
○ [Scopus \(204462\)](#)
○ [PubMed](#)
○ [Crossref](#)
○ [Google Scholar](#)
17. ○ Voltz R.
○ Gultekin S.H.
○ Rosenfeld M.R.
○ et al.
A serologic marker of paraneoplastic limbic and brain-stem encephalitis in patients with testicular cancer.
N. Engl. J. Med. 1999; 340: 1788-1795
[View in Article](#)
○ [Scopus \(302\)](#)
○ [PubMed](#)
○ [Crossref](#)
○ [Google Scholar](#)
18. ○ Posner J.B.
Neurologic Complications of Cancer. FA Davis, Philadelphia 1995
[View in Article](#)
○ [Google Scholar](#)
19. ○ Graus F.
○ Cordon-Cardo C.
○ Posner J.B.
Neuronal antinuclear antibody in sensory neuropathy from lung cancer.
Neurology. 1985; 35: 538-543
[View in Article](#)
○ [PubMed](#)
○ [Crossref](#)
○ [Google Scholar](#)
20. ○ Hersh B.
○ Dalmau J.
○ Dangond F.
○ et al.
Paraneoplastic opsoclonus-myoclonus associated with anti-Hu antibody.
Neurology. 1994; 44: 1754-1755
[View in Article](#)
○ [PubMed](#)
○ [Crossref](#)
○ [Google Scholar](#)
21. ○ Dalmau J.
○ Furneaux H.M.
○ Gralla R.J.
○ et al.
Detection of anti-Hu antibody in the serum of patients with small cell lung cancer — a quantitative western blot analysis.
Ann. Neurol. 1990; 27: 544-552
[View in Article](#)
○ [Scopus \(357\)](#)
○ [PubMed](#)
○ [Crossref](#)
○ [Google Scholar](#)
22. ○ Drlicek M.
○ Bianchi G.

- Bogliun G.
◦ et al.

Antibodies of the anti-Yo and anti-Ri type in the absence of paraneoplastic neurological syndromes: a long-term survey of ovarian cancer patients.

J. Neurol. 1997; 244: 85-89

[View in Article](#)

- [Scopus \(82\)](#)
- [PubMed](#)
- [Crossref](#)
- [Google Scholar](#)

Article Info

Publication History

Accepted: February 27, 2001

Received in revised form: February 15, 2001

Received: October 23, 2000

Identification

DOI: [https://doi.org/10.1016/S0169-5002\(01\)00212-4](https://doi.org/10.1016/S0169-5002(01)00212-4)

Copyright

© 2001 Elsevier Science Ireland Ltd. Published by Elsevier Inc. All rights reserved.

ScienceDirect

[Access this article on ScienceDirect](#)

Related Articles

[Hide Caption](#)[Download](#)[See figure in Article](#)
[Toggle Thumstrip](#)

- [Download Hi-res image](#)
- [Download .PPT](#)

[Home](#)

ARTICLES AND ISSUES

[Articles in Press](#)

[Current Issue](#)

[List of Issues](#)

FOR AUTHORS

[About Open Access](#)

[Author Information](#)

[Permissions](#)

[Researcher Academy](#)

[Submit a Manuscript](#)

JOURNAL INFO

[About Open Access](#)

[About the Journal](#)

[Abstracting/Indexing](#)

[Advertising Information](#)

[Career Opportunities](#)

[Contact Information](#)

[Editorial Board](#)

[Pricing](#)

[New Content Alerts](#)

SUBSCRIBE

SOCIETY INFO

[International Lung Cancer Consortium \(ILCCO\)](#)

[European Thoracic Oncology Platform \(ETOP\)](#)

[British Thoracic Oncology Group \(BTOG\)](#)

MORE PERIODICALS

[Find a Periodical](#)

[Go to Product Catalog](#)

We use cookies to help provide and enhance our service and tailor content. To update your cookie settings, please visit the [Cookie Preference Center](#) for this site.

Copyright © 2022 Elsevier Inc. except certain content provided by third parties. The content on this site is intended for healthcare professionals.

- [Privacy Policy](#)
- [Terms and Conditions](#)
- [Accessibility](#)
- [Help & Contact](#)

