



Sign up for PNAS Online eTocs

Get notified by email when new content goes on-line

[Info for Authors](#) | [Editorial Board](#) | [About](#) | [Subscribe](#) | [Advertise](#) | [Contact](#) | [Site Map](#)

PNAS

Proceedings of the National Academy of Sciences of the United States of America

[Current Issue](#)[Archives](#)[Online Submission](#)

GO

[advanced search >>](#)**Published online before print September 8, 2006, 10.1073/pnas.0603090103**

PNAS | September 19, 2006 | vol. 103 | no. 38 | 14116-14121

OPEN ACCESS ARTICLE
[◀ Previous Article](#) | [Table of Contents](#) | [Next Article ▶](#)

BIOLOGICAL SCIENCES / MEDICAL SCIENCES

Alternative inclusion of fibroblast growth factor receptor 2 exon IIIc in Dunning prostate tumors reveals unexpected epithelial mesenchymal plasticity

 Sebastian Oltean^{*,†}, Brian S. Sorg^{‡,§}, Todd Albrecht^{*,†,¶}, Vivian I. Bonano^{*,†,||}, Robert M. Brazas^{*,†,**}, Mark W. Dewhirst[†], and Mariano A. Garcia-Blanco^{*,†,||,‡}

Departments of *Molecular Genetics and Microbiology, †Radiation Oncology, and ‡Medicine, †Center for RNA Biology, and ||University Program in Genetics and Genomics, Duke University Medical Center, Durham, NC 27710

Edited by Joan A. Steitz, Yale University, New Haven, CT, and approved July 26, 2006 (received for review April 17, 2006)

<http://www.pnas.org/cgi/content/abstract/103/38/14116>

01/10/2006

Alternative inclusion of fibroblast growth factor receptor 2 exon IIIc in Dunning prostate tumors reveals unexpected epithelial mesenchy... Pages 2 of 3

In epithelial cells, alternative splicing of fibroblast growth factor receptor 2 (FGFR2) transcripts leads to the expression of the FGFR2(IIIb) isoform, whereas in mesenchymal cells, the same process results in the synthesis of FGFR2(IIIc). Expression of the FGFR2(IIIc) isoform during prostate tumor progression suggests a disruption of the epithelial character of these tumors. To visualize the use of FGFR2 exon IIIc in prostate AT3 tumors in syngeneic rats, we constructed minigene constructs that report on alternative splicing. Imaging these alternative splicing decisions revealed unexpected mesenchymal–epithelial transitions in these primary tumors. These transitions were observed more frequently where tumor cells were in contact with stroma. Indeed, these transitions were frequently observed among lung micrometastases in the organ parenchyma and immediately adjacent to blood vessels. Our data suggest an unforeseen relationship between epithelial mesenchymal plasticity and malignant fitness.

alternative splicing | mesenchymal–epithelial transitions | tumor plasticity

Freely available online through the PNAS open access option.

[§]Present address: Department of Biomedical Engineering, University of Florida, 130 BME Building, P.O. Box 116131, Gainesville, FL 32611-6131.

[¶]Present address: Cryolife, Inc., Kennesaw, GA 30144.

^{**}Present address: Mirus Corporation, Madison, WI 53719.

Author contributions: S.O., B.S.S., R.M.B., M.W.D., and M.A.G.-B. designed research; S.O., B.S.S., T.A., and V.I.B. performed research; T.A. contributed new reagents/analytic tools; S.O., B.S.S., V.I.B., R.M.B., M.W.D., and M.A.G.-B. analyzed data; and S.O., V.I.B., and M.A.G.-B. wrote the paper.

Conflict of interest statement: M.A.G.-B. is a founder and consultant for Intronn, Inc., which owns and is commercializing the use of transsplicing reactions in gene therapy.

This paper was submitted directly (Track II) to the PNAS office.

[‡]To whom correspondence should be addressed. E-mail: garcia001@mc.duke.edu
<http://www.pnas.org/cgi/content/abstract/103/38/14116>

01/10/2006

This Article

Free via Open Access: OA

- ▶ [Figures Only](#)
- ▶ [OA Full Text](#)
- ▶ [Full Text \(PDF\)](#)
- ▶ [Supporting Information](#)
- ▶ [Alert me when this article is cited](#)
- ▶ [Alert me if a correction is posted](#)

Services

- ▶ [Similar articles in this journal](#)
- ▶ [Similar articles in PubMed](#)
- ▶ [Alert me to new issues of the journal](#)
- ▶ [Add to My File Cabinet](#)
- ▶ [Download to citation manager](#)
- ▶ [Request Copyright Permission](#)

Google Scholar

- ▶ [Articles by Oltean, S.](#)

Articles by Garcia-Blanco, M. A.

PubMed

- ▶ [PubMed Citation](#)
- ▶ [Articles by Oltean, S.](#)
- ▶ [Articles by Garcia-Blanco, M. A.](#)

© 2006 by [The National Academy of Sciences of the USA](#)

[Current Issue](#) | [Archives](#) | [Online Submission](#) | [Info for Authors](#) | [Editorial Board](#) | [About](#)
[Subscribe](#) | [Advertise](#) | [Contact](#) | [Site Map](#)

[Copyright © 2006 by the National Academy of Sciences](#)