## **Accepted Manuscript**

The potential role of sensory testing, skin biopsy, and functional brain imaging as biomarkers in chronic pain clinical trials: IMMPACT considerations

Shannon M. Smith, Robert H. Dworkin, Dennis C. Turk, Ralf Baron, Michael Polydefkis, Irene Tracey, David Borsook, Robert R. Edwards, Richard E. Harris, Tor D. Wager, Lars Arendt-Nielsen, Laurie B. Burke, Daniel B. Carr, Amy Chappell, John T. Farrar, Roy Freeman, Ian Gilron, Veeraindar Goli, Juergen Haeussler, Troels Jensen, Nathaniel P. Katz, Jeffrey Kent, Ernest A. Kopecky, David A. Lee, William Maixner, John D. Markman, Justin C. McArthur, Michael P. McDermott, Lav Parvathenani, Srinivasa N. Raja, Bob A. Rappaport, Andrew S.C. Rice, Michael C. Rowbotham, Jeffrey K. Tobias, Ajay D. Wasan, James Witter



PII: \$1526-5900(17)30481-9

DOI: 10.1016/j.jpain.2017.02.429

Reference: YJPAI 3385

To appear in: Journal of Pain

Received Date: 6 September 2016
Revised Date: 19 January 2017
Accepted Date: 16 February 2017

Please cite this article as: Smith SM, Dworkin RH, Turk DC, Baron R, Polydefkis M, Tracey I, Borsook D, Edwards RR, Harris RE, Wager TD, Arendt-Nielsen L, Burke LB, Carr DB, Chappell A, Farrar JT, Freeman R, Gilron I, Goli V, Haeussler J, Jensen T, Katz NP, Kent J, Kopecky EA, Lee DA, Maixner W, Markman JD, McArthur JC, McDermott MP, Parvathenani L, Raja SN, Rappaport BA, Rice ASC, Rowbotham MC, Tobias JK, Wasan AD, Witter J, The potential role of sensory testing, skin biopsy, and functional brain imaging as biomarkers in chronic pain clinical trials: IMMPACT considerations, *Journal of Pain* (2017), doi: 10.1016/j.jpain.2017.02.429.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## The potential role of sensory testing, skin biopsy, and functional brain imaging as biomarkers in chronic pain clinical trials: IMMPACT considerations

Shannon M. Smith<sup>a</sup>, Robert H. Dworkin<sup>a,b</sup>, Dennis C. Turk<sup>c</sup>, Ralf Baron<sup>d</sup>, Michael Polydefkis<sup>e</sup>, Irene Tracey<sup>f</sup>, David Borsook<sup>g</sup>, Robert R. Edwards<sup>h</sup>, Richard E. Harris<sup>i</sup>, Tor D. Wager<sup>j</sup>, Lars Arendt-Nielsen<sup>k</sup>, Laurie B. Burke<sup>l</sup>, Daniel B. Carr<sup>m</sup>, Amy Chappell<sup>n</sup>, John T. Farrar<sup>o</sup>, Roy Freeman<sup>p</sup>, Ian Gilron<sup>q</sup>, Veeraindar Goli<sup>r</sup>, Juergen Haeussler<sup>s</sup>, Troels Jensen<sup>t</sup>, Nathaniel P. Katz<sup>u</sup>, Jeffrey Kent<sup>v</sup>, Ernest A. Kopecky<sup>w</sup>, David A. Lee<sup>x</sup>, William Maixner<sup>y</sup>, John D. Markman<sup>z</sup>, Justin C. McArthur<sup>g</sup>, Michael P. McDermott<sup>aa</sup>, Lav Parvathenani<sup>ab</sup>, Srinivasa N. Raja<sup>ac</sup>, Bob A. Rappaport<sup>ad</sup>, Andrew S. C. Rice<sup>ae</sup>, Michael C. Rowbotham<sup>af</sup>, Jeffrey K. Tobias<sup>ag</sup>, Ajay D. Wasan<sup>ah</sup>, James Witter<sup>ai</sup>

<sup>&</sup>lt;sup>a</sup> Department of Anesthesiology, University of Rochester School of Medicine and Dentistry, Rochester, NY, USA

<sup>&</sup>lt;sup>b</sup> Department of Neurology, and Center for Human Experimental Therapeutics, University of Rochester School of Medicine and Dentistry, Rochester, NY, USA

<sup>&</sup>lt;sup>c</sup> Department of Anesthesiology and Pain Medicine, University of Washington, Seattle, WA, USA

<sup>&</sup>lt;sup>d</sup> Department of Neurology, Universitaetsklinikum Schleswig-Holstein, Kiel, Germany

<sup>&</sup>lt;sup>e</sup> Department of Neurology, Johns Hopkins University School of Medicine, Baltimore, MD, USA

<sup>&</sup>lt;sup>f</sup> Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, UK

<sup>&</sup>lt;sup>g</sup> Center for Pain and the Brain, Boston Children's Hospital, Harvard Medical School, Boston, MA, USA

<sup>&</sup>lt;sup>h</sup> Departments of Anesthesiology, Brigham & Women's Hospital, Boston, MA, USA

<sup>&</sup>lt;sup>i</sup> Department of Anesthesiology and Internal Medicine, University of Michigan, Ann Arbor, MI, USA

<sup>&</sup>lt;sup>j</sup> Departments of Psychology and Neuroscience, University of Colorado, Boulder, Boulder, CO,

## Download English Version:

## https://daneshyari.com/en/article/5577926

Download Persian Version:

https://daneshyari.com/article/5577926

<u>Daneshyari.com</u>