



June 2016 News

PLEASE FORWARD TO YOUR COLLEAGUES

[www.wikistim.org](http://www.wikistim.org)

*If you are reading this newsletter for the first time, please visit the [ABOUT](#) section on the [WIKISTIM home page](#). This section describes WIKISTIM's unique resources and is accessible without registration.*

### **UPCOMING THIS MONTH!**

#### **North American Neuromodulation Society and Neural Interfaces Conference Joint Meeting**

The [NANS2/NIC conference](#) will take place June 25th through 29th in our hometown, Baltimore. We will present a break-out session on "Maximizing the Value of Neural Interface Data" from 12:30 to 1:30 on the 29th. During this session, we will explain how the way something is reported predicts what will be reported and demonstrate how WIKISTIM will be a positive influence on the quality of the data that will be published as well as on the way these data are analyzed in relation to the findings of other neural interface studies. We are pleased to announce that we will be joined in this session by our friends from the FDA, who will discuss how they mined and analyzed public regulatory databases to gain insight into neurostimulation tissue damage parameters. This work is an excellent example of how the impact of existing data can be maximized to influence the design of future neural interfaces. We urge you to use the link above to access the agenda for this important meeting, which will take place at a hotel overlooking Baltimore's beautiful inner harbor.

### **NEW THIS MONTH**

Three things inspired us to upload citations presenting primary data on DBS and depression: 1) NANS2/NIC is devoting a plenary session to closed loop DBS for depression, 2) a subscriber used our DISCUSSION page to request addition of these citations, and 3) based on the number of citations included in systematic reviews on the subject, we thought this would be easy. We were mistaken in our last assumption: we found 91 pertinent citations and 4 others on the use of electrotherapy to treat depression. Our search underscored the facts that researchers have developed animal models of depression that they are using to elucidate the mechanisms of action of DBS for depression, that depression can be an adverse effect of DBS, that depression can be measured as one of a host of other psychological effects of DBS, and that some papers discuss the use of other therapies to treat depression in DBS patients. We entered the term "depression" as a placeholder under "Indications" in the DBS section, so 126 articles (the new ones and some we had already entered) will come up in a search.

We also made two simple adjustments that should make using the list of citations easier. We added the ability to move to the next page at the top of each page (previously this was only available at the bottom), and we lengthened the number of citations that appear in each page to 400 instead of opening with a list of only 50 and having to click to get a longer list (we like to scroll).

## PLANS FOR THE NEAR FUTURE

Our next order of priority is to complete development of a form for easy online data entry (filling in datasheets for each citation listed). This form will combine check boxes and the ability to enter free text. We hope this will make using WIKISTIM more enjoyable even as it increases in value to the neurostimulation community. Creating this new method of entering data has given us an opportunity to add and rearrange data fields. This would be a good time for you to send your suggestions. We are also looking for volunteers who will beta-test the new system. Once this is up and running, we expect that more people will take advantage of this convenient and rewarding way to earn CME credits.

## REMINDER: DONATIONS WELCOME

We are grateful for any donation in any amount from those who use this free resource. All donations are 100% deductible for those of you who file US income tax and itemize deductions. Our ideas for WIKISTIM enhancements continue to outstrip our financial resources. For example, we would like to create a section for VNS, optimize performance on various platforms (screen sizes, browsers, operating systems), link the data fields to additional information (e.g., descriptions and preferred uses of study designs and outcome criteria, authors' CVs, etc.), incorporate cutting edge data visualization graphics that will update immediately as data are extrapolated from papers and uploaded, and offer a dynamic user experience, including the ability to save searches and customize the way the site behaves.

## CURRENT STATUS

The number of WIKISTIM newsletter subscribers continues to grow (Figure 1), and we continue to enjoy an outstanding "open" rate (Figure 2). Listing our newly added citations each month has proved helpful to many subscribers (Figure 3). Please continue to encourage your colleagues to register for access to our free resource. And THANK YOU for being early adopters!

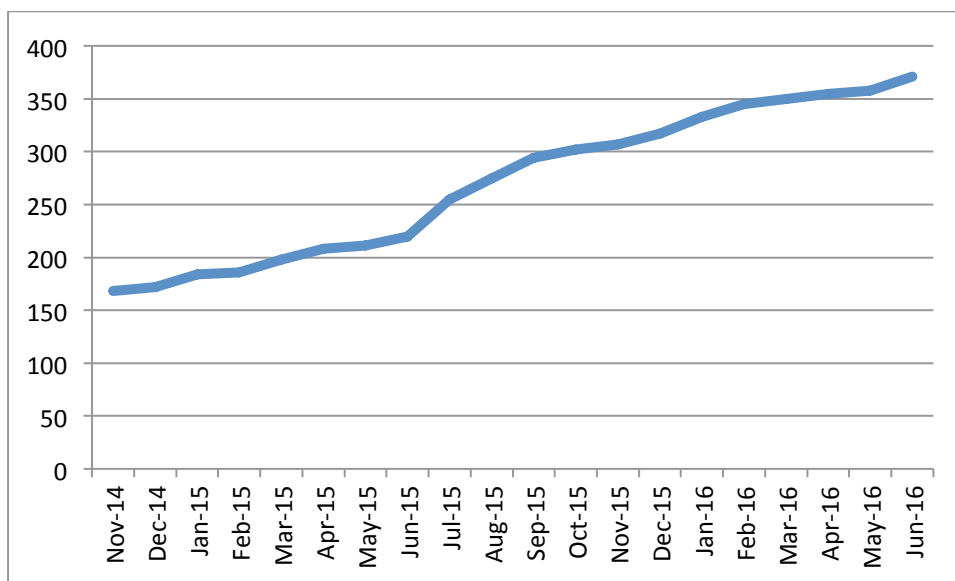


Figure 1. Our 13 new subscribers since our last newsletter increased our total users to 338 and the total who receive this newsletter to 371. We have more newsletter subscribers than WIKISTIM users because some people in a position to support WIKISTIM need to know our news but do not need to use the site themselves.

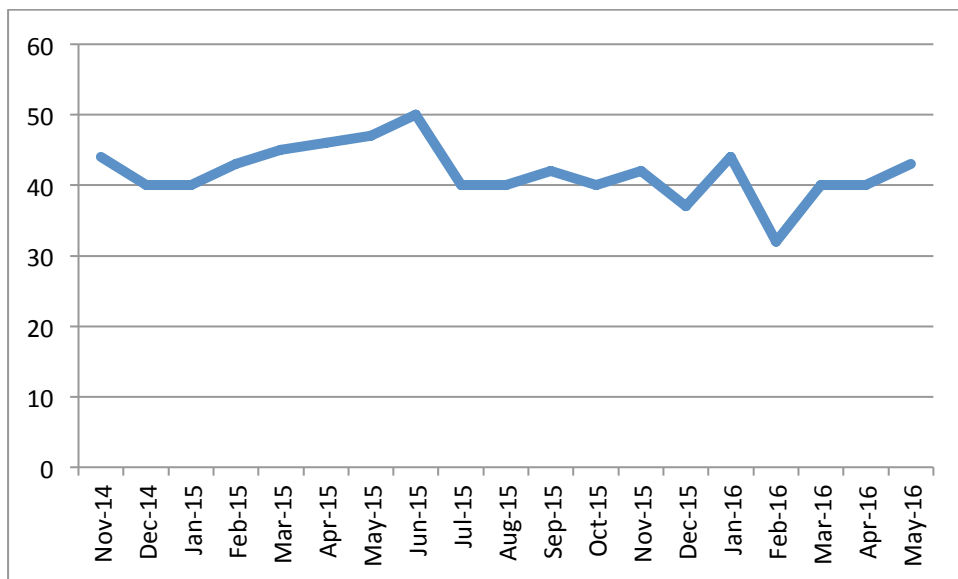


Figure 2. This newsletter has an outstanding average “open rate” of 42% of subscribers (range 32 to 50).

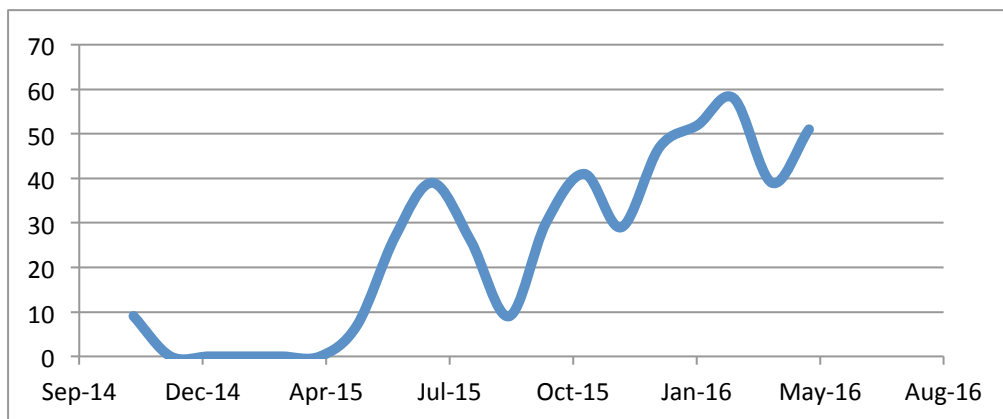


Figure 3. In the 7 months since we began listing newly added citations, an average of 20 recipients clicked on a link an average of 45 times. This compares with an average of 2 people clicking 8 links in the same period last year and an average of 9 people clicking 19 links in the previous 7 months.

## IN A NUTSHELL

### June 1st numbers (see the appendix for the list of new citations.)

- 338 subscribers (13 new)
- SCS citations 1914 (16 new)
- DBS citations 1943 (189 new: 95 depression; 1 epilepsy; 5 OCD; 84 PD; 3 general)
- SNS citations 774 (9 new)
- PNS citations 41 (1 new)
- DRG citations 36 (1 new)
- GES citations 475 (2 new)

## HOW THE NEUROSTIMULATION COMMUNITY CAN HELP

- Submit extracted data from published reports of your choice, or use our datasheets as a guide when you plan your study and write your paper, and then submit the datasheet to us upon journal acceptance.
- Notify us about any reports we might have missed that contain primary data on SCS, SNS, DRG, PNS, GES, DBS/OCD, DBS/Epilepsy, or reports you would like to see added for DBS/PD.
- Suggest website improvements.

## **FINANCIAL SUPPORT FOR 2015 to 2016**

**(Listed alphabetically by first name):**

- B. Todd Sitzman, MD, MPH
- Greatbatch
- Medtronic
- The NANS Foundation (3-year grant commitment started 2014)
- NEVRO
- Richard B. North, MD
- Thomas Abell, MD

## **Ongoing in-kind support:**

- The International Neuromodulation Society (publicity and conference registration)
- The Neuromodulation Foundation (parent non-profit, overhead and development)
- The North American Neuromodulation Society (publicity and conference registration)

## **EDITORIAL BOARD**

### **Editor-in-chief**

Richard B. North, MD

### **Section editors**

Thomas Abell, MD, Gastric Electrical Stimulation  
Tracy Cameron, PhD, Peripheral Nerve Stimulation  
Roger Dmochowski, MD, Sacral Nerve Stimulation  
Robert Foreman, MD, PhD, Co-editor Experimental Studies  
Elliot Krames, MD, Dorsal Root Ganglion Stimulation  
Bengt Linderoth, MD, PhD, Co-editor Experimental Studies  
Richard B. North, MD, Spinal Cord Stimulation  
B. Todd Sitzman, MD, MPH, At Large  
Konstantin Slavin, MD, Deep Brain Stimulation  
Kristl Vonck, MD, PhD, Section on DBS for Epilepsy  
To be determined, Vagus Nerve Stimulation

### **Managing editor**

Jane Shipley

### **Disclosure**

WIKISTIM includes citations for indications that are or might be considered off-label in the United States.

### **Contact**

The Neuromodulation Foundation, Inc.  
117 East 25th Street  
Baltimore, MD 21218  
wikistim@gmail.com  
wikistim.org  
neuromodfound.org

## **APPENDIX: Citations added June 2, 2016**

## **DBS Depression (We added depression as a distinct indication this month.)**

1. Accolla EA, Aust S, Merkl A, Schneider GH, Kühn AA, Bajbouj M, Draganski B. Deep brain stimulation of the posterior gyrus rectus region for treatment resistant depression. *J Affect Disord* 2016 194:33-37 <http://www.ncbi.nlm.nih.gov/pubmed/26802505>
2. Balash Y, Merims D, Giladi N. Suicidal thoughts in patients with Parkinson's disease treated by deep brain stimulation of the subthalamic nuclei: two case reports and review of the literature. *Acta Neuropsychiatr* 2007 19(3):208-210 <http://www.ncbi.nlm.nih.gov/pubmed/26952858>
3. Bergfeld IO, Mantione M, Hoogendoorn ML, Ruhé HG, Notten P, van Laarhoven J, Visser I, Figeo M, de Kwaasteniet BP, Horst F, Schene AH, van den Munckhof P, Beute G, Schuurman R, Denys D. Deep brain stimulation of the ventral anterior limb of the internal capsule for treatment-resistant depression: a randomized clinical trial. *JAMA Psychiatry* 2016 73(5):456-464 <http://www.ncbi.nlm.nih.gov/pubmed/27049915>
4. Bewernick BH, Hurlmann R, Matusch A, Kayser S, Grubert C, Hadrysiewicz B, Axmacher N, Lemke M, Cooper-Mahkorn D, Cohen MX, Brockmann H, Lenartz D, Sturm V, Schlaepfer TE. Nucleus accumbens deep brain stimulation decreases ratings of depression and anxiety in treatment-resistant depression. *Biol Psychiatry* 2010 67(2):110-116 <http://www.ncbi.nlm.nih.gov/pubmed/19914605>
5. Bewernick BH, Kayser S, Sturm V, Schlaepfer TE. Long-term effects of nucleus accumbens deep brain stimulation in treatment-resistant depression: evidence for sustained efficacy. *Neuropsychopharmacology* 2012 37(9):1975-1985 <http://www.ncbi.nlm.nih.gov/pubmed/22473055>
6. Bogod NM, Sinden M, Woo C, Defreitas VG, Torres IJ, Howard AK, Ilcewicz-Klimek MI, Honey CR, Yatham LN, Lam RW. Long-term neuropsychological safety of subgenual cingulate gyrus deep brain stimulation for treatment-resistant depression. *J Neuropsychiatry Clin Neurosci* 2014 26(2):126-133 <http://www.ncbi.nlm.nih.gov/pubmed/24763760>
7. Bregman T, Reznikov R, Diwan M, Raymond R, Butson CR, Nobrega JN, Hamani C. Antidepressant-like effects of medial forebrain bundle deep brain stimulation in rats are not associated with accumbens dopamine release. *Brain Stimul* 2015 8(4):708-713 <http://www.ncbi.nlm.nih.gov/pubmed/25835354>
8. Broadway JM, Holtzheimer PE, Hilimire MR, Parks NA, Devylder JE, Mayberg HS, Corballis PM. Frontal theta cordance predicts 6-month antidepressant response to subcallosal cingulate deep brain stimulation for treatment-resistant depression: a pilot study. *Neuropsychopharmacology* 2012 37(7):1764-1772 <http://www.ncbi.nlm.nih.gov/pubmed/22414813>
9. Bruchim-Samuel M, Lax E, Gazit T, Friedman A, Ahdoot H, Bairachnaya M, Pinhasov A, Yadid G. Electrical stimulation of the vmPFC serves as a remote control to affect VTA activity and improve depressive-like behavior. *Exp Neurol* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27181412>
10. Chakravarty MM, Hamani C, Martinez-Canabal A, Ellegood J, Laliberté C, Nobrega JN, Sankar T, Lozano AM, Frankland PW, Lerch JP. Deep brain stimulation of the ventromedial prefrontal cortex causes reorganization of neuronal processes and vasculature. *Neuroimage* 2016 125:422-427 <http://www.ncbi.nlm.nih.gov/pubmed/26525655>
11. Choi KS, Riva-Posse P, Gross RE, Mayberg HS. Mapping the "depression switch" during intraoperative testing of subcallosal cingulate deep brain stimulation. *AMA Neurol* 2015 72(11):1252-1260 <http://www.ncbi.nlm.nih.gov/pubmed/26408865>
12. Christopher PP, Leykin Y, Appelbaum PS, Holtzheimer PE 3rd, Mayberg HS, Dunn LB. Enrolling in deep brain stimulation research for depression: influences on potential subjects' decision making. *Depress Anxiety* 2012 29(2):139-146 <http://www.ncbi.nlm.nih.gov/pubmed/22095837>
13. Creed MC, Hamani C, Nobrega JN. Effects of repeated deep brain stimulation on depressive- and anxiety-like behavior in rats: comparing entopeduncular and subthalamic nuclei. *Brain Stimul*

2013 6(4):506-514 <http://www.ncbi.nlm.nih.gov/pubmed/23088853>

14. Crowell AL, Garlow SJ, Riva-Posse P, Mayberg HS. Characterizing the therapeutic response to deep brain stimulation for treatment-resistant depression: a single center long-term perspective. *Front Integr Neurosci* 2015 9:41 epub <http://www.ncbi.nlm.nih.gov/pubmed/26124710>
15. Dougherty DD, Rezai AR, Carpenter LL, Howland RH, Bhati MT, O'Reardon JP, Eskandar EN, Baltuch GH, Machado AD, Kondziolka D, Cusin C, Evans KC, Price LH, Jacobs K, Pandya M, Denko T, Tyrka AR, Brelje T, Deckersbach T, Kubu C, Malone DA Jr. A randomized sham-controlled trial of deep brain stimulation of the ventral capsule/ventral striatum for chronic treatment-resistant depression. *Biol Psychiatry* 2015 78(4):240-248 <http://www.ncbi.nlm.nih.gov/pubmed/25726497>
16. Dournes C, Beeské S, Belzung C, Griebel G. Deep brain stimulation in treatment-resistant depression in mice: comparison with the CRF1 antagonist, SSR125543. *Prog Neuropsychopharmacol Biol Psychiatry* 2013 40:213-220 <http://www.ncbi.nlm.nih.gov/pubmed/23367508>
17. Edemann-Callesen H, Voget M, Empl L, Vogel M, Wieske F, Rummel J, Heinz A, Mathé AA, Hadar R, Winter C. Medial forebrain bundle deep brain stimulation has symptom-specific anti-depressant effects in rats and as opposed to ventromedial prefrontal cortex stimulation interacts with the reward system. *Brain Stimul* 2015 8(4):714-723 <http://www.ncbi.nlm.nih.gov/pubmed/25819024>
18. Eggers AE. Treatment of depression with deep brain stimulation works by altering in specific ways the conscious perception of the core symptoms of sadness or anhedonia, not by modulating network circuitry. *Med Hypotheses* 2014 83(1):62-64 <http://www.ncbi.nlm.nih.gov/pubmed/24767178>
19. Encinas JM, Hamani C, Lozano AM, Enikolopov G. Neurogenic hippocampal targets of deep brain stimulation. *J Comp Neurol* 2011 519(1):6-20 <http://www.ncbi.nlm.nih.gov/pubmed/21120924>
20. Etiévant A, Oosterhof C, Bétry C, Abrial E, Novo-Perez M, Rovera R, Scarna H, Devader C, Mazella J, Wegener G, Sánchez C, Dkhissi-Benyahya O, Gronfier C, Coizet V, Beaulieu JM, Blier P, Lucas G, Haddjeri N. Astroglial control of the antidepressant-like effects of prefrontal cortex deep brain stimulation. *EBioMedicine* 2015 2(8):896-906 <http://www.ncbi.nlm.nih.gov/pubmed/26425697>
21. Falowski SM, Sharan A, Reyes BA, Sikkema C, Szot P, Van Bockstaele EJ. An evaluation of neuroplasticity and behavior after deep brain stimulation of the nucleus accumbens in an animal model of depression. *Neurosurgery* 2011 69(6):1281-1290 <http://www.ncbi.nlm.nih.gov/pubmed/21566538>
22. Filkowski MM, Mayberg HS, Holtzheimer PE. Considering eligibility for studies of deep brain stimulation for treatment-resistant depression: insights from a clinical trial in unipolar and bipolar depression. *J ECT* 2016 32(2):122-126 <http://www.ncbi.nlm.nih.gov/pubmed/26479487>
23. Friedman A, Lax E, Abraham L, Tischler H, Yadid G. Abnormality of VTA local field potential in an animal model of depression was restored by patterned DBS treatment. *Eur Neuropsychopharmacol* 2012 22(1):64-71 <http://www.ncbi.nlm.nih.gov/pubmed/21596531>
24. Furlanetti LL, Coenen VA, Aranda IA, Döbrössy MD. Chronic deep brain stimulation of the medial forebrain bundle reverses depressive-like behavior in a hemiparkinsonian rodent model. *Exp Brain Res* 2015 233(11):3073-3085 <http://www.ncbi.nlm.nih.gov/pubmed/26195164>
25. Furlanetti LL, Coenen VA, Döbrössy MD. Ventral tegmental area dopaminergic lesion-induced depressive phenotype in the rat is reversed by deep brain stimulation of the medial forebrain bundle. *Behav Brain Res* 2016 299:132-140 <http://www.ncbi.nlm.nih.gov/pubmed/26657994>
26. Furlanetti LL, Döbrössy MD, Aranda IA, Coenen VA. Feasibility and safety of continuous and chronic bilateral deep brain stimulation of the medial forebrain bundle in the naïve Sprague-Dawley rat. *Behav Neurol* 2015 2015:256196 <http://www.ncbi.nlm.nih.gov/pubmed/25960609>
27. Gazit T, Friedman A, Lax E, Samuel M, Zahut R, Katz M, Abraham L, Tischler H, Teicher M, Yadid G. Programmed deep brain stimulation synchronizes VTA gamma band field potential and alleviates

- depressive-like behavior in rats. *Neuropharmacology* 2015 91:135-141  
<http://www.ncbi.nlm.nih.gov/pubmed/25497452>
28. Grubert C, Hurlmann R, Bewernick BH, Kayser S, Hadrysiewicz B, Axmacher N, Sturm V, Schlaepfer TE. Neuropsychological safety of nucleus accumbens deep brain stimulation for major depression: effects of 12-month stimulation. *World J Biol Psychiatry* 2011 12(7):516-527  
<http://www.ncbi.nlm.nih.gov/pubmed/21736514>
  29. Guo CC, Hyett MP, Nguyen VT, Parker GB, Breakspear MJ. Distinct neurobiological signatures of brain connectivity in depression subtypes during natural viewing of emotionally salient films. *Psychol Med* 2016 46(7):1535-1545 <http://www.ncbi.nlm.nih.gov/pubmed/26888415>
  30. Gutman DA, Holtzheimer PE, Behrens TE, Johansen-Berg H, Mayberg HS. A tractography analysis of two deep brain stimulation white matter targets for depression. *Biol Psychiatry* 2009 65(4):276-282 <http://www.ncbi.nlm.nih.gov/pubmed/19013554>
  31. Hamani C, Amorim BO, Wheeler AL, Diwan M, Driesslein K, Covolan L, Butson CR, Nobrega JN. Deep brain stimulation in rats: different targets induce similar antidepressant-like effects but influence different circuits. *Neurobiol Dis* 2014 71:205-214  
<http://www.ncbi.nlm.nih.gov/pubmed/25131446>
  32. Hamani C, Diwan M, Isabella S, Lozano AM, Nobrega JN. Effects of different stimulation parameters on the antidepressant-like response of medial prefrontal cortex deep brain stimulation in rats. *J Psychiatr Res* 2010 44(11):683-687  
<http://www.ncbi.nlm.nih.gov/pubmed/20096858>
  33. Hamani C, Diwan M, Macedo CE, Brandão ML, Shumake J, Gonzalez-Lima F, Raymond R, Lozano AM, Fletcher PJ, Nobrega JN. Antidepressant-like effects of medial prefrontal cortex deep brain stimulation in rats. *Biol Psychiatry* 2010 67(2):117-124  
<http://www.ncbi.nlm.nih.gov/pubmed/19819426>
  34. Hamani C, Machado DC, Hipólido DC, Dubiela FP, Suchecki D, Macedo CE, Tescarollo F, Martins U, Covolan L, Nobrega JN. Deep brain stimulation reverses anhedonic-like behavior in a chronic model of depression: role of serotonin and brain derived neurotrophic factor. *Biol Psychiatry* 2012 71(1):30-35 <http://www.ncbi.nlm.nih.gov/pubmed/22000731>
  35. Hamani C, Mayberg H, Snyder B, Giacobbe P, Kennedy S, Lozano AM. Deep brain stimulation of the subcallosal cingulate gyrus for depression: anatomical location of active contacts in clinical responders and a suggested guideline for targeting. *J Neurosurg* 2009 111(6):1209-1215  
<http://www.ncbi.nlm.nih.gov/pubmed/19480538>
  36. Hilimire MR, Mayberg HS, Holtzheimer PE, Broadway JM, Parks NA, DeVlyder JE, Corballis PM. Effects of subcallosal cingulate deep brain stimulation on negative self-bias in patients with treatment-resistant depression. *Brain Stimul* 2015 8(2):185-191  
<http://www.ncbi.nlm.nih.gov/pubmed/25499035>
  37. Holtzheimer PE, Kelley ME, Gross RE, Filkowski MM, Garlow SJ, Barrocas A, Wint D, Craighead MC, Kozarsky J, Chismar R, Moreines JL, Mewes K, Posse PR, Gutman DA, Mayberg HS. Subcallosal cingulate deep brain stimulation for treatment-resistant unipolar and bipolar depression. *Arch Gen Psychiatry* 2012 69(2):150-158  
<http://www.ncbi.nlm.nih.gov/pubmed/22213770>
  38. Hoyer C, Kranaster L, Sartorius A, Hellweg R, Gass P. Long-term course of brain-derived neurotrophic factor serum levels in a patient treated with deep brain stimulation of the lateral habenula. *Neuropsychobiology* 2012 65(3):147-152  
<http://www.ncbi.nlm.nih.gov/pubmed/22378223>
  39. Hoyer C, Sartorius A, Lecourtier L, Kiening KL, Meyer-Lindenberg A, Gass P. One ring to rule them all?--Temporospatial specificity of deep brain stimulation for treatment-resistant depression. *Med Hypotheses* 2013 81(4):611-618 <http://www.ncbi.nlm.nih.gov/pubmed/23910557>
  40. Huebl J, Brücke C, Merkl A, Bajbouj M, Schneider GH, Kühn AA. Processing of emotional stimuli is

reflected by modulations of beta band activity in the subgenual anterior cingulate cortex in patients with treatment resistant depression. *Soc Cogn Affect Neurosci* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27013105>

41. Insel N, Pilkiw M, Nobrega JN, Hutchison WD, Takehara-Nishiuchi K, Hamani C. Chronic deep brain stimulation of the rat ventral medial prefrontal cortex disrupts hippocampal-prefrontal coherence. *Exp Neurol* 2015 269:1-7 <http://www.ncbi.nlm.nih.gov/pubmed/25842268>
42. Jiménez F, Velasco F, Salin-Pascual R, Hernández JA, Velasco M, Criales JL, Nicolini H. A patient with a resistant major depression disorder treated with deep brain stimulation in the inferior thalamic treated with deep brain stimulation in the inferior thalamic peduncle. *Neurosurgery* 2005 57(3):585-593 <http://www.ncbi.nlm.nih.gov/pubmed/16145540>
43. Jiménez-Sánchez L, Castañé A, Pérez-Caballero L, Grifoll-Escoda M, López-Gil X, Campa L, Galofré M, Berrocoso E, Adell A. Activation of AMPA receptors mediates the antidepressant action of deep brain stimulation of the infralimbic prefrontal cortex. *Cereb Cortex* 2016 26(6):2778-2789 <http://www.ncbi.nlm.nih.gov/pubmed/26088969>
44. Jiménez-Sánchez L, Linge R, Campa L, Valdizán EM, Pazos Á, Díaz Á, Adell A. Behavioral, neurochemical and molecular changes after acute deep brain stimulation of the infralimbic prefrontal cortex. *Neuropharmacology* 2016 108:91-102 <http://www.ncbi.nlm.nih.gov/pubmed/27108934>
45. Johansen-Berg H, Gutman DA, Behrens TE, Matthews PM, Rushworth MF, Katz E, Lozano AM, Mayberg HS. Anatomical connectivity of the subgenual cingulate region targeted with deep brain stimulation for treatment-resistant depression. *Cereb Cortex* 2008 18(6):1374-1383 <http://www.ncbi.nlm.nih.gov/pubmed/17928332>
46. Kennedy SH, Giacobbe P, Rizvi SJ, Placenza FM, Nishikawa Y, Mayberg HS, Lozano AM. Deep brain stimulation for treatment-resistant depression: follow-up after 3 to 6 years. *Am J Psychiatry* 2011 168(5):502-510 <http://www.ncbi.nlm.nih.gov/pubmed/21285143>
47. Kiening K, Sartorius A. A new translational target for deep brain stimulation to treat depression. *EMBO Mol Med* 2013 5(8):1151-1153 <http://www.ncbi.nlm.nih.gov/pubmed/23828711>
48. Kim Y, Morath B, Hu C, Byrne LK, Sutor SL, Frye MA, Tye SJ. Antidepressant actions of lateral habenula deep brain stimulation differentially correlate with CaMKII/GSK3/AMPK signaling locally and in the infralimbic cortex. *Behav Brain Res* 2016 306:170-177 <http://www.ncbi.nlm.nih.gov/pubmed/26956153>
49. Kosel M, Sturm V, Frick C, Lenartz D, Zeidler G, Brodesser D, Schlaepfer TE. Mood improvement after deep brain stimulation of the internal globus pallidus for tardive dyskinesia in a patient suffering from major depression. *J Psychiatr Res* 2007 41(9):801-803 <http://www.ncbi.nlm.nih.gov/pubmed/16962613>
50. Laver B, Diwan M, Nobrega JN, Hamani C. Augmentative therapies do not potentiate the antidepressant-like effects of deep brain stimulation in rats. *J Affect Disord* 2014 161:87-90 <http://www.ncbi.nlm.nih.gov/pubmed/24751313>
51. Leykin Y, Christopher PP, Holtzheimer PE, Appelbaum PS, Mayberg HS, Lisanby SH, Dunn LB. Participants' perceptions of deep brain stimulation research for treatment-resistant depression: risks, benefits, and therapeutic misconception. *AJOB Prim Res* 2011 2(4):33-41 <http://www.ncbi.nlm.nih.gov/pubmed/26225215>
52. Lim LW, Prickaerts J, Huguet G, Kadar E, Hartung H, Sharp T, Temel Y. Electrical stimulation alleviates depressive-like behaviors of rats: investigation of brain targets and potential mechanisms. *Transl Psychiatry* 2015 5:e535 <http://www.ncbi.nlm.nih.gov/pubmed/25826110>
53. Lozano AM, Giacobbe P, Hamani C, Rizvi SJ, Kennedy SH, Kolivakis TT, Debonnel G, Sadikot AF, Lam RW, Howard AK, Ilcewicz-Klimek M, Honey CR, Mayberg HS. A multicenter pilot study of subcallosal cingulate area deep brain stimulation for treatment-resistant depression. *J Neurosurg* 2012 116(2):315-322 <http://www.ncbi.nlm.nih.gov/pubmed/22098195>



54. Lozano AM, Mayberg HS, Giacobbe P, Hamani C, Craddock RC, Kennedy SH. Subcallosal cingulate gyrus deep brain stimulation for treatment-resistant depression. *Biol Psychiatry* 2008 64(6):461-467 <http://www.ncbi.nlm.nih.gov/pubmed/18639234>
55. Lujan JL, Chaturvedi A, Choi KS, Holtzheimer PE, Gross RE, Mayberg HS, McIntyre CC. Tractography-activation models applied to subcallosal cingulate deep brain stimulation. *Brain Stimul* 2013 6(5):737-739 <http://www.ncbi.nlm.nih.gov/pubmed/23602025>
56. Lujan JL, Chaturvedi A, Malone DA, Rezai AR, Machado AG, McIntyre CC. Axonal pathways linked to therapeutic and nontherapeutic outcomes during psychiatric deep brain stimulation. *Hum Brain Mapp* 2012 33(4):958-968 <http://www.ncbi.nlm.nih.gov/pubmed/21520343>
57. Machado A, Haber S, Sears N, Greenberg B, Malone D, Rezai A. Functional topography of the ventral striatum and anterior limb of the internal capsule determined by electrical stimulation of awake patients. *Clin Neurophysiol* 2009 120(11):1941-1948 <http://www.ncbi.nlm.nih.gov/pubmed/19781987>
58. Malone DA Jr, Dougherty DD, Rezai AR, Carpenter LL, Friehs GM, Eskandar EN, Rauch SL, Rasmussen SA, Machado AG, Kubu CS, Tyrka AR, Price LH, Stypulkowski PH, Giftakis JE, Rise MT, Malloy PF, Salloway SP, Greenberg BD. Deep brain stimulation of the ventral capsule/ventral striatum for treatment-resistant depression. *Biol Psychiatry* 2009 65(4):267-275 <http://www.ncbi.nlm.nih.gov/pubmed/18842257>
59. Martín-Blanco A, Serra-Blasco M, Pérez-Egea R, de Diego-Adeliño J, Carceller-Sindreu M, Puigdemont D, Molet J, Álvarez E, Pérez V, Portella MJ. Immediate cerebral metabolic changes induced by discontinuation of deep brain stimulation of subcallosal cingulate gyrus in treatment-resistant depression. *J Affect Disord* 2015 173:159-162 <http://www.ncbi.nlm.nih.gov/pubmed/25462411>
60. McNab JA, Voets NL, Jenkinson N, Squier W, Miller KL, Goodwin GM, Aziz TZ. Reduced limbic connections may contraindicate subgenual cingulate deep brain stimulation for intractable depression. *J Neurosurg* 2009 111(4):780-784 <http://www.ncbi.nlm.nih.gov/pubmed/19284230>
61. McNeely HE, Mayberg HS, Lozano AM, Kennedy SH. Neuropsychological impact of Cg25 deep brain stimulation for treatment-resistant depression: preliminary results over 12 months. *J Nerv Ment Dis* 2008 196(5):405-410 <http://www.ncbi.nlm.nih.gov/pubmed/18477883>
62. Meng H, Wang Y, Huang M, Lin W, Wang S, Zhang B. Chronic deep brain stimulation of the lateral habenula nucleus in a rat model of depression. *Brain Res* 2011 1422:32-38 <http://www.ncbi.nlm.nih.gov/pubmed/21978548>
63. Merkl A, Neumann WJ, Huebl J, Aust S, Horn A, Krauss JK, Dziobek I, Kuhn J, Schneider GH, Bajbouj M, Kühn AA. Modulation of beta-band activity in the subgenual anterior cingulate cortex during emotional empathy in treatment-resistant depression. *Cereb Cortex* 2016 26(6):2626-2638 <http://www.ncbi.nlm.nih.gov/pubmed/25994959>
64. Merkl A, Schneider GH, Schönecker T, Aust S, Kühn KP, Kupsch A, Kühn AA, Bajbouj M. Antidepressant effects after short-term and chronic stimulation of the subgenual cingulate gyrus in treatment-resistant depression. *Exp Neurol* 2013 249:160-168 <http://www.ncbi.nlm.nih.gov/pubmed/24012926>
65. Millet B, Jaafari N, Polosan M, Baup N, Giordana B, Haegelen C, Chabardes S, Fontaine D, Devaux B, Yelnik J, Fossati P, Aouizerate B, Krebs MO, Robert G, Jay T, Cornu P, Vérin M, Drapier S, Drapier D, Sauleau P, Peron J, Le Jeune F, Naudet F, Reymann JM. Limbic versus cognitive target for deep brain stimulation in treatment-resistant depression: accumbens more promising than caudate. *Eur Neuropsychopharmacol* 2014 24(8):1229-1239 <http://www.ncbi.nlm.nih.gov/pubmed/24950819>
66. Moreines JL, McClintock SM, Kelley ME, Holtzheimer PE, Mayberg HS. Neuropsychological function before and after subcallosal cingulate deep brain stimulation in patients with treatment-resistant depression. *Depress Anxiety* 2014 31(8):690-698

<http://www.ncbi.nlm.nih.gov/pubmed/24753183>

67. Parthoens J, Verhaeghe J, Stroobants S, Staelens S. Deep brain stimulation of the prefrontal medial prefrontal cortex: quantification of the effect on glucose metabolism in the rat brain using [(18) F]FDG microPET. *Mol Imaging Biol* 2014 16(6):838-845  
<http://www.ncbi.nlm.nih.gov/pubmed/24943500>
68. Perez-Caballero L, Pérez-Egea R, Romero-Grimaldi C, Puigdemont D, Molet J, Caso JR, Mico JA, Pérez V, Leza JC, Berrocoso E. Early responses to deep brain stimulation in depression are modulated by anti-inflammatory drugs. *Mol Psychiatry* 2014 19(5):607-61  
<http://www.ncbi.nlm.nih.gov/pubmed/23711979>
69. Puigdemont D, Pérez-Egea R, Portella MJ, Molet J, de Diego-Adeliño J, Gironell A, Radua J, Gómez-Anson B, Rodríguez R, Serra M, de Quintana C, Artigas F, Álvarez E, Pérez V. Deep brain stimulation of the subcallosal cingulate gyrus: further evidence in treatment-resistant major depression. *Int J Neuropsychopharmacol* 2012 15(1):121-133  
<http://www.ncbi.nlm.nih.gov/pubmed/21777510>
70. Puigdemont D, Portella M, Pérez-Egea R, Molet J, Gironell A, de Diego-Adeliño J, Martín A, Rodríguez R, Álvarez E, Artigas F, Pérez V. A randomized double-blind crossover trial of deep brain stimulation of the subcallosal cingulate gyrus in patients with treatment-resistant depression: a pilot study of relapse prevention. *J Psychiatry Neurosci* 2015 40(4):224-231  
<http://www.ncbi.nlm.nih.gov/pubmed/25652752>
71. Quraan MA, Protzner AB, Daskalakis ZJ, Giacobbe P, Tang CW, Kennedy SH, Lozano AM, McAndrews MP. EEG power asymmetry and functional connectivity as a marker of treatment effectiveness in DBS surgery for depression. *Neuropsychopharmacology* 2014 39(5):1270-1281  
<http://www.ncbi.nlm.nih.gov/pubmed/24285211>
72. Ramasubbu R, Anderson S, Haffenden A, Chavda S, Kiss ZH. Double-blind optimization of subcallosal cingulate deep brain stimulation for treatment-resistant depression: a pilot study. *J Psychiatry Neurosci* 2013 38(5):325-332 <http://www.ncbi.nlm.nih.gov/pubmed/23527884>
73. Ramasubbu R, Vecchiarelli HA, Hill MN, Kiss ZH. Brain-derived neurotrophic factor and subcallosal deep brain stimulation for refractory depression. *World J Biol Psychiatry* 2015 16(2):135-138  
<http://www.ncbi.nlm.nih.gov/pubmed/25226864>
74. Rea E, Rummel J, Schmidt TT, Hadar R, Heinz A, Mathé AA, Winter C. Anti-anhedonic effect of deep brain stimulation of the prefrontal cortex and the dopaminergic reward system in a genetic rat model of depression: an intracranial self-stimulation paradigm study. *Brain Stimul* 2014 7(1):21-28 <http://www.ncbi.nlm.nih.gov/pubmed/24139146>
75. Riva-Posse P, Choi KS, Holtzheimer PE, McIntyre CC, Gross RE, Chaturvedi A, Crowell AL, Garlow SJ, Rajendra JK, Mayberg HS. Defining critical white matter pathways mediating successful subcallosal cingulate deep brain stimulation for treatment-resistant depression. *Biol Psychiatry* 2014 76(12):963-969 <http://www.ncbi.nlm.nih.gov/pubmed/24832866>
76. Sartorius A, Henn FA. Deep brain stimulation of the lateral habenula in treatment resistant major depression. *Med Hypotheses* 2007 69(6):1305-1308  
<http://www.ncbi.nlm.nih.gov/pubmed/17498883>
77. Schadt CR, Cox KL, Tramontana MG, Byrne DW, Davis TL, Fang JY, Konrad PE, Padaliya B, Mutter RW, Gill CE, Richardson CR, Charles PD. Depression and intelligence in patients with Parkinson's disease and deep-brain stimulation. *J Natl Med Assoc* 2006 98(7):1121-1125  
<http://www.ncbi.nlm.nih.gov/pubmed/16895282>
78. Schlaepfer TE, Bewernick BH, Kayser S, Madler B, Coenen VA. Rapid effects of deep brain stimulation for treatment-resistant major depression. *Biol Psychiatry* 2013 73(12):1204-1212  
<http://www.ncbi.nlm.nih.gov/pubmed/23562618>
79. Schlaepfer TE, Cohen MX, Frick C, Kosel M, Brodesser D, Axmacher N, Joe AY, Kreft M, Lenartz D, Sturm V. Deep brain stimulation to reward circuitry alleviates anhedonia in refractory major

- depression. *Neuropsychopharmacology* 2008 33(2):368-377  
<http://www.ncbi.nlm.nih.gov/pubmed/17429407>
80. Schmuckermair C, Gaburro S, Sah A, Landgraf R, Sartori SB, Singewald N. Behavioral and neurobiological effects of deep brain stimulation in a mouse model of high anxiety- and depression-like behavior. *Neuropsychopharmacology* 2013 38(7):1234-1244  
<http://www.ncbi.nlm.nih.gov/pubmed/23325324>
  81. Schoenberg MR, Maddux BN, Riley DE, Whitney CM, Ogrocki PK, Gould D, Maciunas RJ. Five-months-postoperative neuropsychological outcome from a pilot prospective randomized clinical trial of thalamic deep brain stimulation for Tourette syndrome. *Neuromodulation* 2015 18(2):97-104 <http://www.ncbi.nlm.nih.gov/pubmed/25250712>
  82. Schoenberg MR, Mash KM, Bharucha KJ, Francel PC, Scott JG. Deep brain stimulation parameters associated with neuropsychological changes in subthalamic nucleus stimulation for refractory Parkinson's disease. *Stereotact Funct Neurosurg* 2008 86(6):337-344  
<http://www.ncbi.nlm.nih.gov/pubmed/18854660>
  83. Serra-Blasco M, de Vita S, Rodríguez MR, de Diego-Adeliño J, Puigdemont D, Martín-Blanco A, Pérez-Egea R, Molet J, Álvarez E, Pérez V, Portella MJ. Cognitive functioning after deep brain stimulation in subcallosal cingulate gyrus for treatment-resistant depression: an exploratory study. *Psychiatry Res* 2015 225(3):341-346 <http://www.ncbi.nlm.nih.gov/pubmed/25592978>
  84. Soulas T, Gurruchaga JM, Palfi S, Cesaro P, Nguyen JP, Fénelon G. Attempted and completed suicides after subthalamic nucleus stimulation for Parkinson's disease. *J Neurol Neurosurg Psychiatry* 2008 79(8):952-954 <http://www.ncbi.nlm.nih.gov/pubmed/18403439>
  85. Srejic LR, Hamani C, Hutchison WD. High-frequency stimulation of the medial prefrontal cortex decreases cellular firing in the dorsal raphe. *Eur J Neurosci* 2015 41(9):1219-1226  
<http://www.ncbi.nlm.nih.gov/pubmed/25712703>
  86. Sun Y, Giacobbe P, Tang CW, Barr MS, Rajji T, Kennedy SH, Fitzgerald PB, Lozano AM, Wong W, Daskalakis ZJ. Deep brain stimulation modulates gamma oscillations and theta-gamma coupling in treatment resistant depression. *Brain Stimul* 2015 8(6):1033-1042  
<http://www.ncbi.nlm.nih.gov/pubmed/26195320>
  87. Tooker A, Madsen TE, Yorita A, Crowell A, Shah KG, Felix S, Mayberg HS, Pannu S, Rainnie DG, Tolosa V. Microfabricated polymer-based neural interface for electrical stimulation/recording, drug delivery, and chemical sensing--development. *Conf Proc IEEE Eng Med Biol Soc* 2013 2013:5159-5162 <http://www.ncbi.nlm.nih.gov/pubmed/24110897>
  88. Torres CV, Ezquiaga E, Navas M, de Sola RG. Deep brain stimulation of the subcallosal cingulate for medication-resistant type I bipolar depression: case report. *Bipolar Disord* 2013 15(6):719-721  
<http://www.ncbi.nlm.nih.gov/pubmed/23930934>
  89. Tröster AI, Fields JA, Wilkinson S, Pahwa R, Koller WC, Lyons KE. Effect of motor improvement on quality of life following subthalamic stimulation is mediated by changes in depressive symptomatology. *Stereotact Funct Neurosurg* 2003 80(1-4):43-47  
<http://www.ncbi.nlm.nih.gov/pubmed/14745208>
  90. Veerakumar A, Challis C, Gupta P, Da J, Upadhyay A, Beck SG, Berton O. Antidepressant-like effects of cortical deep brain stimulation coincide with pro-neuroplastic adaptations of serotonin systems. *Biol Psychiatry* 2014 76(3):203-212 <http://www.ncbi.nlm.nih.gov/pubmed/24503468>
  91. Winter C, Bregman T, Voget M, Raymond R, Hadar R, Nobrega JN, Hamani C. Acute high frequency stimulation of the prefrontal cortex or nucleus accumbens does not increase hippocampal neurogenesis in rats. *J Psychiatr Res* 2015 68:27-29  
<http://www.ncbi.nlm.nih.gov/pubmed/26228396>

### **ECT for Depression in DBS patients**

1. Bailine S, Kremen N, Kohen I, Linder H, Schwartz GJ, Mogilner AY, Pourfar M. Bitemporal

- electroconvulsive therapy for depression in a Parkinson disease patient with a deep-brain stimulator. *J ECT* 2008 24(2):171-172 <http://www.ncbi.nlm.nih.gov/pubmed/18580566>
2. Chou KL, Hurtig HI, Jaggi JL, Baltuch GH, Pelchat RJ, Weintraub D. Electroconvulsive therapy for depression in a Parkinson's disease patient with bilateral subthalamic nucleus deep brain stimulators. *Parkinsonism Relat Disord* 2005 11(6):403-406 <http://www.ncbi.nlm.nih.gov/pubmed/15994113>
  3. Moscarillo FM, Annunziata CM. ECT in a [tremor] patient with a deep brain-stimulating electrode in place. *J ECT* 2000 16(3):287-290 <http://www.ncbi.nlm.nih.gov/pubmed/11005051>
  4. Vila-Rodriguez F, McGirr A, Tham J, Hadjipavlou G, Honey CR. Electroconvulsive therapy in patients with deep brain stimulators. *J ECT* 2014 30(3):e16-e18 <http://www.ncbi.nlm.nih.gov/pubmed/24625701>

**DBS Epilepsy (We believe WIKISTIM offers the most comprehensive list of citations that report primary data for this DBS Epilepsy.)**

1. Gibson WS, Ross EK, Han SR, Van Gompel JJ, Min HK, Lee KH. Anterior thalamic deep brain stimulation: functional activation patterns in a large animal model. *Brain Stimul* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27160467>

**DBS OCD (We believe WIKISTIM offers the most comprehensive list of citations that report primary data for DBS/OCD.)**

1. Chang CH, Chen SY, Hsiao YL, Tsai ST, Tsai HC. Hypomania with hypersexuality following bilateral anterior limb stimulation in obsessive-compulsive disorder. *J Neurosurg* 2010 112(6):1299-1300 Erratum: 113(2):394 <http://www.ncbi.nlm.nih.gov/pubmed/19911886>
2. McCracken CB, Grace AA. Nucleus accumbens deep brain stimulation produces region-specific alterations in local field potential oscillations and evoked responses in vivo. *J Neurosci* 2009 29(16):5354-5363 <http://www.ncbi.nlm.nih.gov/pubmed/19386932>
3. Münte TF, Heldmann M, Hinrichs H, Marco-Pallares J, Krämer UM, Sturm V, Heinze HJ. Contribution of subcortical structures to cognition assessed with invasive electrophysiology in humans. *Front Neurosci* 2008 2(1):72-78 <http://www.ncbi.nlm.nih.gov/pubmed/18982109>
4. Rodriguez-Romaguera J, Greenberg BD, Rasmussen SA, Quirk GJ. An avoidance-based rodent model of exposure with response prevention therapy for obsessive-compulsive disorder. *Biol Psychiatry* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27086546>
5. Sassi M, Zekaj E, Grotta A, Pollini A, Pellanda A, Borroni M, Pacchetti C, Menghetti C, Porta M, Servello D. Safety in the use of dexmedetomidine (precdex) for deep brain stimulation surgery: our experience in 23 randomized patients. *Neuromodulation* 2013 16(5):401-406 <http://www.ncbi.nlm.nih.gov/pubmed/22780449>

**DBS PD (We continue to add older DBS citations that we passed over in our initial list.)**

1. Abulseoud OA, Kasasbeh A, Min HK, Fields JA, Tye SJ, Goerss S, Knight EJ, Sampson SM, Klassen BT, Matsumoto JY, Stoppel C, Lee KH, Frye MA. Stimulation-induced transient nonmotor psychiatric symptoms following subthalamic deep brain stimulation in patients with Parkinson's disease: association with clinical outcomes and neuroanatomical correlates. *Stereotact Funct Neurosurg* 2016 94(2):93-101 <http://www.ncbi.nlm.nih.gov/pubmed/27093641>
2. Allert N, Gippert SM, Sajonz BE, Nelles C, Bewernick B, Schlaepfer TE, Coenen VA. Arachnophobia alleviated by subthalamic nucleus stimulation for Parkinson's disease. *J Neural Transm (Vienna)* 2016 123(6):631-635 <http://www.ncbi.nlm.nih.gov/pubmed/27198699>
3. Antonini A, Landi A, Benti R, Mariani C, De Notaris R, Marotta G, Pezzoli G, Gaini SM, Gerundini P. Functional neuroimaging (PET and SPECT) in the selection and assessment of patients with Parkinson's disease undergoing deep brain stimulation. *J Neurosurg Sci* 2003 47(1):40-46

<http://www.ncbi.nlm.nih.gov/pubmed/12900731>

4. Antonini A, Marotta G, Benti R, Landi A, De Notaris R, Mariani C, Gerundini P, Pezzoli G, Gaini SM. Brain flow changes before and after deep brain stimulation of the subthalamic nucleus in Parkinson's disease. *Neurol Sci* 2003 24(3):151-152  
<http://www.ncbi.nlm.nih.gov/pubmed/14598061>
5. Aono M, Iga J, Ueno S, Agawa M, Tsuda T, Ohmori T. Neuropsychological and psychiatric assessments following bilateral deep brain stimulation of the subthalamic nucleus in Japanese patients with Parkinson's disease. *J Clin Neurosci* 2014 21(9):1595-1598  
<http://www.ncbi.nlm.nih.gov/pubmed/24794694>
6. Barichella M, Marczewska AM, Mariani C, Landi A, Vairo A, Pezzoli G. Body weight gain rate in patients with Parkinson's disease and deep brain stimulation. *Mov Disord* 2003 18(11):1337-1340  
<http://www.ncbi.nlm.nih.gov/pubmed/14639677>
7. Berney A, Panisset M, Sadikot AF, Ptito A, Dagher A, Fraraccio M, Savard G, Pell M, Benkelfat C. Mood stability during acute stimulator challenge in Parkinson's disease patients under long-term treatment with subthalamic deep brain stimulation. *Mov Disord* 2007 22(8):1093-1096  
<http://www.ncbi.nlm.nih.gov/pubmed/17394245>
8. Beuter A, Titcombe MS. Modulation of tremor amplitude during deep brain stimulation at different frequencies. *Brain Cogn* 2003 53(2):190-192  
<http://www.ncbi.nlm.nih.gov/pubmed/14607145>
9. Bordini BJ, Garg A, Gallagher CL, Bell B, Garell PC. Neuropsychological effects of bilateral deep brain stimulation of the subthalamic nucleus in Parkinson's disease. *Stereotact Funct Neurosurg* 2007 85(2-3):113-120  
<http://www.ncbi.nlm.nih.gov/pubmed/17228177>
10. Castelli L, Lanotte M, Zibetti M, Caglio M, Rizzi L, Ducati A, Bergamasco B, Lopiano L. Apathy and verbal fluency in STN-stimulated PD patients. An observational follow-up study. *J Neurol* 2007 254(9):1238-1243  
<http://www.ncbi.nlm.nih.gov/pubmed/17426909>
11. Castelli L, Perozzo P, Genesis ML, Torre E, Pesare M, Cinquepalmi A, Lanotte M, Bergamasco B, Lopiano L. Sexual well being in parkinsonian patients after deep brain stimulation of the subthalamic nucleus. *J Neurol Neurosurg Psychiatry* 2004 75(9):1260-1264  
<http://www.ncbi.nlm.nih.gov/pubmed/15314111>
12. Castelli L, Perozzo P, Zibetti M, Crivelli B, Morabito U, Lanotte M, Cossa F, Bergamasco B, Lopiano L. Chronic deep brain stimulation of the subthalamic nucleus for Parkinson's disease: effects on cognition, mood, anxiety and personality traits. *Eur Neurol* 2006 55(3):136-144  
<http://www.ncbi.nlm.nih.gov/pubmed/16682797>
13. Castelli L, Tonello D, Rizzi L, Zibetti M, Lanotte M, Lopiano L. Alexithymia in patients with Parkinson's disease treated with DBS of the subthalamic nucleus: a case-control study. *Front Psychol* 2014 5:1168  
epub <http://www.ncbi.nlm.nih.gov/pubmed/25352821>
14. Castelli L, Zibetti M, Rizzi L, Caglio M, Lanotte M, Lopiano L. Neuropsychiatric symptoms three years after subthalamic DBS in PD patients: a case-control study. *J Neurol* 2008 255(10):1515-1520  
<http://www.ncbi.nlm.nih.gov/pubmed/18769862>
15. Chen CC, Lee ST, Wu T, Chen CJ, Chen MC, Lu CS. Short-term effect of bilateral subthalamic stimulation for advanced Parkinson's disease. *Chang Gung Med J* 2003 26(5):344-351  
<http://www.ncbi.nlm.nih.gov/pubmed/12934851>
16. Cicolin A, Lopiano L, Zibetti M, Torre E, Tavella A, Guastamacchia G, Terreni A, Makrydakis G, Fattori E, Lanotte MM, Bergamasco B, Mutani R. Effects of deep brain stimulation of the subthalamic nucleus on sleep architecture in parkinsonian patients. *Sleep Med* 2004 5(2):207-210  
<http://www.ncbi.nlm.nih.gov/pubmed/15033145>
17. Coenen VA, Honey CR, Hurwitz T, Rahman AA, McMaster J, Bürgel U, Mädler B. Medial forebrain bundle stimulation as a pathophysiological mechanism for hypomania in subthalamic nucleus deep brain stimulation for Parkinson's disease. *Neurosurgery* 2009 64(6):1106-1114

<http://www.ncbi.nlm.nih.gov/pubmed/19487890>

18. Counelis GJ, Simuni T, Forman MS, Jaggi JL, Trojanowski JQ, Baltuch GH. Bilateral subthalamic nucleus deep brain stimulation for advanced PD: correlation of intraoperative MER and postoperative MRI with neuropathological findings. *Mov Disord* 2003 18(9):1062-1065  
<http://www.ncbi.nlm.nih.gov/pubmed/14502679>
19. De Gaspari D, Siri C, Di Gioia M, Antonini A, Isella V, Pizzolato A, Landi A, Vergani F, Gaini SM, Appollonio IM, Pezzoli G. Clinical correlates and cognitive underpinnings of verbal fluency impairment after chronic subthalamic stimulation in Parkinson's disease. *Parkinsonism Relat Disord* 2006 12(5):289-295 <http://www.ncbi.nlm.nih.gov/pubmed/16554183>
20. De Gaspari D, Siri C, Landi A, Cilia R, Bonetti A, Natuzzi F, Morgante L, Mariani CB, Sganzerla E, Pezzoli G, Antonini A. Clinical and neuropsychological follow up at 12 months in patients with complicated Parkinson's disease treated with subcutaneous apomorphine infusion or deep brain stimulation of the subthalamic nucleus. *J Neurol Neurosurg Psychiatry* 2006 77(4):450-453  
<http://www.ncbi.nlm.nih.gov/pubmed/16543520>
21. Drapier D, Drapier S, Sauleau P, Haegelen C, Raoul S, Biseul I, Peron J, Lallement F, Rivier I, Reymann JM, Edan G, Verin M, Millet B. Does subthalamic nucleus stimulation induce apathy in Parkinson's disease? *J Neurol* 2006 253(8):1083-1091  
<http://www.ncbi.nlm.nih.gov/pubmed/16607469>
22. Drapier D, Péron J, Leray E, Sauleau P, Biseul I, Drapier S, Le Jeune F, Travers D, Bourguignon A, Haegelen C, Millet B, Vérin M. Emotion recognition impairment and apathy after subthalamic nucleus stimulation in Parkinson's disease have separate neural substrates. *Neuropsychologia* 2008 46(11):2796-2801 <http://www.ncbi.nlm.nih.gov/pubmed/18579165>
23. Eskandar EN, Flaherty A, Cosgrove GR, Shinobu LA, Barker FG 2nd. Surgery for Parkinson disease in the United States, 1996 to 2000: practice patterns, short-term outcomes, and hospital charges in a nationwide sample. *J Neurosurg* 2003 99(5):863-871  
<http://www.ncbi.nlm.nih.gov/pubmed/14609166>
24. Foffani G, Priori A, Egidio M, Rampini P, Tamma F, Caputo E, Moxon KA, Cerutti S, Barbieri S. 300-Hz subthalamic oscillations in Parkinson's disease. *Brain*. 2003 126(Pt 10):2153-2163  
<http://www.ncbi.nlm.nih.gov/pubmed/12937087>.
25. Funkiewiez A, Ardouin C, Caputo E, Krack P, Fraix V, Klinger H, Chabardes S, Foote K, Benabid AL, Pollak P. Long term effects of bilateral subthalamic nucleus stimulation on cognitive function, mood, and behaviour in Parkinson's disease. *J Neurol Neurosurg Psychiatry* 2004 75(6):834-839  
<http://www.ncbi.nlm.nih.gov/pubmed/15145995>
26. Gironell A, Kulisevsky J, Rami L, Fortuny N, García-Sánchez C, Pascual-Sedano B. Effects of pallidotomy and bilateral subthalamic stimulation on cognitive function in Parkinson disease. A controlled comparative study. *J Neurol* 2003 250(8):917-923  
<http://www.ncbi.nlm.nih.gov/pubmed/12928909>
27. Gradinaru V, Mogri M, Thompson KR, Henderson JM, Deisseroth K. Optical deconstruction of parkinsonian neural circuitry. *Science* 2009 324(5925):354-359  
<http://www.ncbi.nlm.nih.gov/pubmed/19299587>
28. Hamel W, Schrader B, Weinert D, Herzog J, Müller D, Deuschl G, Volkmann J, Mehdorn HM. Technical complication in deep brain stimulation. *Zentralbl Neurochir* 2002 63(3):124-127  
<http://www.ncbi.nlm.nih.gov/pubmed/12457339>
29. Heo JH, Lee KM, Paek SH, Kim MJ, Lee JY, Kim JY, Cho SY, Lim YH, Kim MR, Jeong SY, Jeon BS. The effects of bilateral subthalamic nucleus deep brain stimulation (STN DBS) on cognition in Parkinson disease. *J Neurol Sci* 2008 273(1-2):19-24  
<http://www.ncbi.nlm.nih.gov/pubmed/18640690>
30. Herzog J, Reiff J, Krack P, Witt K, Schrader B, Müller D, Deuschl G. Manic episode with psychotic symptoms induced by subthalamic nucleus stimulation in a patient with Parkinson's disease. *Mov*

- Disord 2003 18(11):1382-1384 <http://www.ncbi.nlm.nih.gov/pubmed/14639687>
31. Herzog J, Volkmann J, Krack P, Kopper F, Pötter M, Lorenz D, Steinbach M, Klebe S, Hamel W, Schrader B, Weinert D, Müller D, Mehdorn HM, Deuschl G. Two-year follow-up of subthalamic deep brain stimulation in Parkinson's disease. *Mov Disord* 2003 18(11):1332-1337 <http://www.ncbi.nlm.nih.gov/pubmed/14639676>
  32. Hesselmann V, Sorger B, Girnus R, Lasek K, Maarouf M, Wedekind C, Bunke J, Schulte O, Krug B, Lackner K, Sturm V. Intraoperative functional MRI as a new approach to monitor deep brain stimulation in Parkinson's disease. *Eur Radiol* 2004 14(4):686-690 <http://www.ncbi.nlm.nih.gov/pubmed/14513267>
  33. Higuchi MA, Martinez-Ramirez D, Morita H, Topiol D, Bowers D, Ward H, Warren L, DeFranco M, Hicks JA, Hegland KW, Troche MS, Kulkarni S, Hastings E, Foote KD, Okun MS. Interdisciplinary Parkinson's disease deep brain stimulation screening and the relationship to unintended hospitalizations and quality of life. *PLoS One* 2016 11(5):e0153785 <http://www.ncbi.nlm.nih.gov/pubmed/27159519>
  34. Hilker R, Voges J, Ghaemi M, Lehrke R, Rudolf J, Koulousakis A, Herholz K, Wienhard K, Sturm V, Heiss WD. Deep brain stimulation of the subthalamic nucleus does not increase the striatal dopamine concentration in parkinsonian humans. *Mov Disord* 2003 18(1):41-48 <http://www.ncbi.nlm.nih.gov/pubmed/12518299>
  35. Jiang LL, Liu JL, Fu XL, Xian WB, Gu J, Liu YM, Ye J, Chen J, Qian H, Xu SH, Pei Z, Chen L. Long-term efficacy of subthalamic nucleus deep brain stimulation in Parkinson's disease: a 5-year follow-up study in China. *Chin Med J (Engl)* 2015 128(18):2433-2438 <http://www.ncbi.nlm.nih.gov/pubmed/26365958>
  36. Kluger BM, Parra V, Jacobson C, Garvan CW, Rodriguez RL, Fernandez HH, Fogel A, Skoblar BM, Bowers D, Okun MS. The prevalence of fatigue following deep brain stimulation surgery in Parkinson's disease and association with quality of life. *Parkinsons Dis* 2012 2012:769506 epub <http://www.ncbi.nlm.nih.gov/pubmed/22666631>
  37. Landi A, Grimaldi M, Antonini A, Parolin M, Zincone A, Marina R, De Grandi C, Sganzerla EP, Gaini SM. MRI indirect stereotactic targeting for deep brain stimulation in Parkinson's disease. *J Neurosurg Sci* 2003 47(1):26-32 <http://www.ncbi.nlm.nih.gov/pubmed/12900729>
  38. Langner-Lemercier S, Drapier S, Naudet F, Le Clanche N, Houvenaghel JF, Sauleau P, Jannin P, Haegelen C, Le Jeune F, Vérin M. Preoperative brain metabolism and quality of life after subthalamic nucleus stimulation in Parkinson's disease. *J Neurol* 2015 262(4):881-889 <http://www.ncbi.nlm.nih.gov/pubmed/25634679>
  39. Lavian H, Ben-Porat H, Korngreen A. High and low frequency stimulation of the subthalamic nucleus induce prolonged changes in subthalamic and globus pallidus neurons. *Front Syst Neurosci* 2013 7:73 epub <http://www.ncbi.nlm.nih.gov/pubmed/24391553>
  40. Lilleeng B, Dietrichs E. Unmasking psychiatric symptoms after STN deep brain stimulation in Parkinson's disease. *Acta Neurol Scand Suppl* 2008 188:41-45 <http://www.ncbi.nlm.nih.gov/pubmed/1843922>
  41. Lopiano L, Torre E, Benedetti F, Bergamasco B, Perozzo P, Pollo A, Rizzone M, Tavella A, Lanotte M. Temporal changes in movement time during the switch of the stimulators in Parkinson's disease patients treated by subthalamic nucleus stimulation. *Eur Neurol* 2003 50(2):94-99 <http://www.ncbi.nlm.nih.gov/pubmed/12944714>
  42. Lueken U, Stankevich Y, Goschke T, Schläpfer TE, Koy J, Reichmann H, Storch A, Wolz M. Executive task performance under deep brain stimulation of the subthalamic nucleus in Parkinson's disease revisited: the modulating influence of apathy, depression and mood. *German. Fortschr Neurol Psychiatr* 2014 82(7):386-393 <http://www.ncbi.nlm.nih.gov/pubmed/25014201>
  43. Mahdavi R, Malakouti SK, Shahidi GA, Parvaresh-Rizi M. The effects of bilateral subthalamic nucleus stimulation on cognitive and neuropsychiatric functions in Parkinson's disease: a case-

- control study. *Basic Clin Neurosci* 2013 4(3):217-223  
<http://www.ncbi.nlm.nih.gov/pubmed/25337350>
44. Mandat TS, Hurwitz T, Honey CR. Hypomania as an adverse effect of subthalamic nucleus stimulation: report of two cases. *Acta Neurochir (Wien)* 2006 148(8):895-897  
<http://www.ncbi.nlm.nih.gov/pubmed/16763733>
  45. Mazzone P. Deep brain stimulation in Parkinson's disease: bilateral implantation of globus pallidus and subthalamic nucleus. *J Neurosurg Sci* 2003 47(1):47-51  
<http://www.ncbi.nlm.nih.gov/pubmed/12900732>
  46. Merola A, Espay AJ, Romagnolo A, Bernardini A, Rizzi L, Rosso M, Espay KJ, Zibetti M, Lanotte M, Lopiano L. Advanced therapies in Parkinson's disease: long-term retrospective study. *Parkinsonism Relat Disord* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27215392>
  47. Mock S, Osborn DJ, Brown ET, Stuart Reynolds W, Turchan M, Pallavaram S, Rodriguez W, Dmochowski R, Tolleson CM. The impact of pallidal and subthalamic deep brain stimulation on urologic function in Parkinson's disease. *Neuromodulation* 2016 epub  
<http://www.ncbi.nlm.nih.gov/pubmed/27172446>
  48. Montel S, Bungener C. What relation is there between deep brain stimulation and coping strategies in Parkinson's disease? *Mov Disord* 2008 23(12):1780-1784  
<http://www.ncbi.nlm.nih.gov/pubmed/18661551>
  49. Morrison CE, Borod JC, Brin MF, Raskin SA, Germano IM, Weisz DJ, Olanow CW. A program for neuropsychological investigation of deep brain stimulation (PNIDBS) in movement disorder patients: development, feasibility, and preliminary data. *Neuropsychiatry Neuropsychol Behav Neurol* 2000 13(3):204-219 <http://www.ncbi.nlm.nih.gov/pubmed/10910093>
  50. Ory-Magne F, Brefel-Courbon C, Simonetta-Moreau M, Fabre N, Lotterie JA, Chaynes P, Berry I, Lazorthes Y, Rascol O. Does ageing influence deep brain stimulation outcomes in Parkinson's disease? *Mov Disord* 2007 22(10):1457-1463 <http://www.ncbi.nlm.nih.gov/pubmed/17516457>
  51. Parvaresh-Rizi M, Tabibkhoei A, Shahidi G, Vaidyanathan J, Tabibkhoei A, Rohani M. Spatial distance between anatomically- and physiologically-identified targets in subthalamic nucleus deep brain stimulation in Parkinson's disease. *Iran J Neurol* 2016 15(1):34-45  
<http://www.ncbi.nlm.nih.gov/pubmed/27141275>
  52. Perriol MP, Krystkowiak P, Defebvre L, Blond S, Destée A, Dujardin K. Stimulation of the subthalamic nucleus in Parkinson's disease: cognitive and affective changes are not linked to the motor outcome. *Parkinsonism Relat Disord* 2006 12(4):205-210  
<http://www.ncbi.nlm.nih.gov/pubmed/16549386>
  53. Pesenti A, Priori A, Locatelli M, Egidi M, Rampini P, Tamma F, Caputo E, Chiesa V, Barbieri S. Subthalamic somatosensory evoked potentials in Parkinson's disease. *Mov Disord* 2003 18(11):1341-1345 <http://www.ncbi.nlm.nih.gov/pubmed/14639678>
  54. Priori A, Egidi M, Pesenti A, Rohr M, Rampini P, Locatelli M, Tamma F, Caputo E, Chiesa V, Barbieri S. Do intraoperative microrecordings improve subthalamic nucleus targeting in stereotactic neurosurgery for Parkinson's disease? *J Neurosurg Sci* 2003 47(1):56-60  
<http://www.ncbi.nlm.nih.gov/pubmed/12900734>
  55. Ramirez de Noriega F, Eitan R, Marmor O, Lavi A, Linetzky E, Bergman H, Israel Z. Constant current versus constant voltage subthalamic nucleus deep brain stimulation in Parkinson's disease. *Stereotact Funct Neurosurg* 2015 93(2):114-121  
<http://www.ncbi.nlm.nih.gov/pubmed/25721228>
  56. Rampini PM, Locatelli M, Alimehmeti R, Tamma F, Caputo E, Priori A, Pesenti A, Rohr M, Egidi M. Multiple sequential image-fusion and direct MRI localisation of the subthalamic nucleus for deep brain stimulation. *J Neurosurg Sci* 2003 47(1):33-3  
<http://www.ncbi.nlm.nih.gov/pubmed/12900730>
  57. Raoul S, Faighel M, Rivier I, Vérin M, Lajat Y, Damier P. Staged lesions through implanted deep



- brain stimulating electrodes: a new surgical procedure for treating tremor or dyskinesias. *Mov Disord* 2003 18(8):933-938 <http://www.ncbi.nlm.nih.gov/pubmed/12889085>
58. Sassi M, Zekaj E, Grotta A, Pollini A, Pellanda A, Borroni M, Pacchetti C, Menghetti C, Porta M, Servello D. Safety in the use of dexmedetomidine (precdex) for deep brain stimulation surgery: our experience in 23 randomized [listed twice: PD and OCD et al.] patients. *Neuromodulation* 2013 16(5):401-406 <http://www.ncbi.nlm.nih.gov/pubmed/22780449>
  59. Schoenberg MR, Mash KM, Bharucha KJ, Francel PC, Scott JG. Deep brain stimulation parameters associated with neuropsychological changes in subthalamic nucleus stimulation for refractory Parkinson's disease. *Stereotact Funct Neurosurg* 2008 86(6):337-344 <http://www.ncbi.nlm.nih.gov/pubmed/18854660>
  60. Schroeder U, Kuehler A, Lange KW, Haslinger B, Tronnier VM, Krause M, Pfister R, Boecker H, Ceballos-Baumann AO. Subthalamic nucleus stimulation affects a frontotemporal network: a PET study. *Ann Neurol* 2003 54(4):445-450 <http://www.ncbi.nlm.nih.gov/pubmed/14520655>
  61. Seifried C, Boehncke S, Heinzmann J, Baudrexel S, Weise L, Gasser T, Eggert K, Fogel W, Baas H, Badenhoop K, Steinmetz H, Hilker R. Diurnal variation of hypothalamic function and chronic subthalamic nucleus stimulation in Parkinson's disease. *Neuroendocrinology* 2013 97(3):283-290 <http://www.ncbi.nlm.nih.gov/pubmed/23051911>
  62. Shen KZ, Zhu ZT, Munhall A, Johnson SW. Synaptic plasticity in rat subthalamic nucleus induced by high-frequency stimulation. *Synapse* 2003 50(4):314-319 <http://www.ncbi.nlm.nih.gov/pubmed/14556236>
  63. Soulas T, Storme M, Martínez-Martín P, Pichlak M, Gurruchaga JM, Palfi S, Fénelon G. Assessing health-related quality of life with the SCOPA-PS in French individuals with Parkinson's disease having undergone DBS-STN: a validation study. *Rev Neurol (Paris)* 2016 172(4-5):281-288 <http://www.ncbi.nlm.nih.gov/pubmed/27158039>
  64. Steigerwald F, Müller L, Johannes S, Matthies C, Volkmann J. Directional deep brain stimulation of the subthalamic nucleus: a pilot study using a novel neurostimulation device. *Mov Disord* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27241197>
  65. Summerson SR, Aazhang B, Kemere CT. Characterizing motor and cognitive effects associated with deep brain stimulation in the GPi of hemi-Parkinsonian rats. *IEEE Trans Neural Syst Rehabil Eng* 2014 2(6):1218-1227 <http://www.ncbi.nlm.nih.gov/pubmed/24951705>
  66. Tang V, Zhu CX, Chan D, Lau C, Chan A, Mok V, Yeung J, Poon WS. Evidence of improved immediate verbal memory and diminished category fluency following STN-DBS in Chinese-Cantonese patients with idiopathic Parkinson's disease. *Neurol Sci* 2015 36(8):1371-1377 <http://www.ncbi.nlm.nih.gov/pubmed/25708249>
  67. Tao Y, Liang G. Effect of subthalamic nuclei electrical stimulation in the treatment of Parkinson's disease. *Cell Biochem Biophys* 2015 71(1):113-117 <http://www.ncbi.nlm.nih.gov/pubmed/25099644>
  68. Temperli P, Ghika J, Villemure JG, Burkhard PR, Bogousslavsky J, Vingerhoets FJ. How do parkinsonian signs return after discontinuation of subthalamic DBS? *Neurology* 2003 60(1):78-81 <http://www.ncbi.nlm.nih.gov/pubmed/12525722>
  69. Thobois S, Mertens P, Guenot M, Hermier M, Mollion H, Bouvard M, Chazot G, Broussolle E, Sindou M. Subthalamic nucleus stimulation in Parkinson's disease: clinical evaluation of 18 patients. *J Neurol* 2002 249(5):529-534 <http://www.ncbi.nlm.nih.gov/pubmed/12021940>
  70. Timmermann L, Jain R, Chen L, Maarouf M, Barbe MT, Allert N, Brücke T, Kaiser I, Beirer S, Sejio F, Suarez E, Lozano B, Haegelen C, Vérin M, Porta M, Servello D, Gill S, Whone A, Van Dyck N, Alesch F. Multiple-source current steering in subthalamic nucleus deep brain stimulation for Parkinson's disease (the VANTAGE study): a non-randomised, prospective, multicentre, open-label study. *Lancet Neurol* 2015 14(7):693-701 <http://www.ncbi.nlm.nih.gov/pubmed/26027940>
  71. Tir M, Devos D, Blond S, Touzet G, Reyns N, Duhamel A, Cottencin O, Dujardin K, Cassim F, Destée

- A, Defebvre L, Krystkowiak P. Exhaustive, one-year follow-up of subthalamic nucleus deep brain stimulation in a large, single-center cohort of parkinsonian patients. *Neurosurgery* 2007 61(2):297-304 <http://www.ncbi.nlm.nih.gov/pubmed/17762742>
72. Tolleson CM, Bagai K, Walters AS, Davis TL. A pilot study assessing the effects of pallidal deep brain stimulation on sleep quality and polysomnography in Parkinson's patients. *Neuromodulation* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27186939>
73. Varma TR, Fox SH, Eldridge PR, Littlechild P, Byrne P, Forster A, Marshall A, Cameron H, Mclver K, Fletcher N, Steiger M. Deep brain stimulation of the subthalamic nucleus: effectiveness in advanced Parkinson's disease patients previously reliant on apomorphine. *J Neurol Neurosurg Psychiatry* 2003 74(2):170-174 <http://www.ncbi.nlm.nih.gov/pubmed/12531942>
74. Wenzelburger R, Kopper F, Zhang BR, Witt K, Hamel W, Weinert D, Kuhtz-Buschbeck J, Gölge M, Illert M, Deuschl G, Krack P. Subthalamic nucleus stimulation for Parkinson's disease preferentially improves akinesia of proximal arm movements compared to finger movements. *Mov Disord* 2003 18(10):1162-1169 <http://www.ncbi.nlm.nih.gov/pubmed/14534921>
75. Whelan BM, Murdoch BE, Theodoros DG, Hall B, Silburn P. Defining a role for the subthalamic nucleus within operative theoretical models of subcortical participation in language. *J Neurol Neurosurg Psychiatry* 2003 74(11):1543-1550 <http://www.ncbi.nlm.nih.gov/pubmed/14617713>
76. Witt K, Daniels C, Reiff J, Krack P, Volkmann J, Pinski MO, Krause M, Tronnier V, Kloss M, Schnitzler A, Wojtecki L, Bötzel K, Danek A, Hilker R, Sturm V, Kupsch A, Karner E, Deuschl G. Neuropsychological and psychiatric changes after deep brain stimulation for Parkinson's disease: a randomised, multicentre study. *Lancet Neurol* 2008 7(7):605-614 <http://www.ncbi.nlm.nih.gov/pubmed/18538636>
77. Yelnik J, Damier P, Demeret S, Gervais D, Bardin E, Bejjani BP, François C, Houeto JL, Arnule I, Dormont D, Galanaud D, Pidoux B, Cornu P, Agid Y. Localization of stimulating electrodes in patients with Parkinson disease by using a three-dimensional atlas-magnetic resonance imaging coregistration method. *J Neurosurg* 2003 99(1):89-99 <http://www.ncbi.nlm.nih.gov/pubmed/12854749>
78. York MK, Dulay M, Macias A, Levin HS, Grossman R, Simpson R, Jankovic J. Cognitive declines following bilateral subthalamic nucleus deep brain stimulation for the treatment of Parkinson's disease. *J Neurol Neurosurg Psychiatry* 2008 79(7):789-795 <http://www.ncbi.nlm.nih.gov/pubmed/17965146>
79. Zabek M, Sobstyl M, Koziara H. Deep brain stimulation of the Vim nucleus of the thalamus in the treatment of parkinsonian tremor. *Polish. Neurol Neurochir Pol* 2003 37(2):437-446 <http://www.ncbi.nlm.nih.gov/pubmed/14558490>
80. Zahodne LB, Okun MS, Foote KD, Fernandez HH, Rodriguez RL, Kirsch-Darrow L, Bowers D. Cognitive declines one year after unilateral deep brain stimulation surgery in Parkinson's disease: a controlled study using reliable change. *Clin Neuropsychol* 2009 23(3):385-405 <http://www.ncbi.nlm.nih.gov/pubmed/18821180>
81. Zhang JG, Zhang K, Ma Y, Hu WH, Yang AC, Chu JS, Wu ST, Ge M, Zhang Y, Wang ZC. Follow-up of bilateral subthalamic deep brain stimulation for Parkinson's disease. *Acta Neurochir Suppl* 2006 99:43-47 <http://www.ncbi.nlm.nih.gov/pubmed/17370762>
82. Zheng F, Lammert K, Nixdorf-Bergweiler BE, Steigerwald F, Volkmann J, Alzheimer C. Axonal failure during high frequency stimulation of rat subthalamic nucleus. *J Physiol* 2011 589(Pt 11):2781-2793 <http://www.ncbi.nlm.nih.gov/pubmed/21486784>
83. Zibetti M, Moro E, Krishna V, Sammartino F, Picillo M, Munhoz RP, Lozano AM, Fasano A. Low-frequency subthalamic stimulation in Parkinson's disease: long-term outcome and predictors. *Brain Stimul* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27198578>
84. Zibetti M, Torre E, Cinquepalmi A, Rosso M, Ducati A, Bergamasco B, Lanotte M, Lopiano L. Motor and nonmotor symptom follow-up in parkinsonian patients after deep brain stimulation of the

subthalamic nucleus. Eur Neurol 2007 58(4):218-223  
<http://www.ncbi.nlm.nih.gov/pubmed/17823535>

### **DBS General**

1. Engbaek J, Ostergaard D, Viby-Mogensen J. Double burst stimulation (DBS): a new pattern of nerve stimulation to identify residual neuromuscular block. Br J Anaesth 1989 62(3):274-278  
<http://www.ncbi.nlm.nih.gov/pubmed/2522790>
2. Kocabicak E, Jahanshahi A, Schonfeld L, Heschem SA, Temel Y, Tan S. Deep brain stimulation of the rat subthalamic nucleus induced inhibition of median raphe serotonergic and dopaminergic neurotransmission. Turk Neurosurg 2015 25(5):721-727  
<http://www.ncbi.nlm.nih.gov/pubmed/26442537>
3. Knight EJ, Min HK, Hwang SC, Marsh MP, Paek S, Kim I, Felmlee JP, Abulseoud OA, Bennet KE, Frye MA, Lee KH. Nucleus accumbens deep brain stimulation results in insula and prefrontal activation: a large animal fMRI study. PLoS One 2013 8(2):e56640  
<http://www.ncbi.nlm.nih.gov/pubmed/23441210>

### **DRG (We believe WIKISTIM offers the most comprehensive list of citations that report primary data for DRG.)**

1. Weiner RL, Yeung A, Montes Garcia C, Tyler Perryman L, Speck B. Treatment of FBSS low back pain with a novel percutaneous DRG wireless stimulator: pilot and feasibility study. Pain Med 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27125284>

### **GES (We believe WIKISTIM offers the most comprehensive list of citations that report primary data for GES.)**

1. Grover I, Kim R, Spree DC, Lahr CJ, Kedar A, Kothari S, Fleisher D, Abell TL. Gastric electrical stimulation as potential treatment in drug refractory cyclic vomiting syndrome. J Neurogastroenterol Motil 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27241799>
2. Li S, Chen JD. Pulse width-dependent effects of intestinal electrical stimulation for obesity: role of gastrointestinal motility and hormones. Obes Surg 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27236777>

### **PNFS and SCS (We believe WIKISTIM offers the most comprehensive list of citations that report primary data for PNFS.)**

1. Akbaş M, Yeğin MA, Özdemir İ, Göksu E, Akyüz M. Subcutaneous stimulation as additional therapy to spinal cord stimulation in a post-laminectomy syndrome patient. Turkish. Agri 2016 28(1):49-53 <http://www.ncbi.nlm.nih.gov/pubmed/27225614>

### **SCS (We believe WIKISTIM offers the most comprehensive list of citations that report primary data for SCS.)**

1. Arle JE, Mei L, Carlson KW, Shils JL. High-frequency stimulation of dorsal column axons: potential underlying mechanism of paresthesia-free neuropathic pain relief. Neuromodulation 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27145196>
2. Bir SC, Konar S, Maiti T, Nanda A, Guthikonda B. Neuromodulation in intractable pain management: outcomes and predictors of revisions of spinal cord stimulators. Neurosurg Focus 2016 40(5):E4 <http://www.ncbi.nlm.nih.gov/pubmed/27132525>
3. Chavakula V, Vasudeva V, Chi J. Epidural spinal cord stimulation for the restoration of balance and gait following spinal cord injury. Neurosurgery 2016 78(6):N19-N20  
<http://www.ncbi.nlm.nih.gov/pubmed/27191812>
4. Dimar JR 2nd, Endriga DT, Carreon LY. Osteolysis and cervical cord compression secondary to

- silicone granuloma formation around a dorsal spinal cord stimulator: a case report. *J Neurol Surg Rep* 2016 77(2):e67-e72 <http://www.ncbi.nlm.nih.gov/pubmed/27247910>
5. Dingu N, Deumens R, Taccola G. Electrical stimulation able to trigger locomotor spinal circuits also induces dorsal horn activity. *Neuromodulation* 2016 19(1):38-46 <http://www.ncbi.nlm.nih.gov/pubmed/26449748>
  6. Dose F, Deumens R, Forget P, Taccola G. Staggered multi-site low-frequency electrostimulation effectively induces locomotor patterns in the isolated rat spinal cord. *Spinal Cord* 2016 54(2):93-101 <http://www.ncbi.nlm.nih.gov/pubmed/26099214>
  7. Fitzgibbon DR, Stephens LS, Posner KL, Michna E, Rathmell JP, Pollak KA, Domino KB. Injury and liability associated with implantable devices for chronic pain. *Anesthesiology* 2016 124(6):1384-1393 <http://www.ncbi.nlm.nih.gov/pubmed/27054366>
  8. Kim JH, Ha SW, Son BC. Spinal cord stimulation for refractory neuropathic pain of neuralgic amyotrophy. *Korean J Neurotrauma* 2015 11(2):162-166 <http://www.ncbi.nlm.nih.gov/pubmed/27169086>
  9. Kowalski KE, Kowalski T, DiMarco AF. Safety assessment of epidural wire electrodes for cough production in a chronic pig model of spinal cord injury. *J Neurosci Methods* 2016 268:98-105 <http://www.ncbi.nlm.nih.gov/pubmed/27168496>
  10. Lopez WO, Barbosa DC, Teixeira MJ, Paiz M, Moura L, Monaco BA, Fonoff ET. Pain relief in CRPS-II after spinal cord and motor cortex simultaneous dual stimulation. *Pain Physician* 2016 19(4):E631-E635 <http://www.ncbi.nlm.nih.gov/pubmed/27228530>
  11. Mejía-Terrazas GE, López-Ruiz VG, Infante-Cosío G, Carapia-Sadurni A, Hernández-Méndez-Villamil E. Spinal cord stimulation in teenager with complex regional pain syndrome for Lyme's disease. Case report and review of the literature. Spanish. *Acta Ortop Mex* 2015 29(4):228-231 <http://www.ncbi.nlm.nih.gov/pubmed/27187001>
  12. North JM, Hong KJ, Cho PY. Clinical outcomes of 1 kHz subperception spinal cord stimulation in implanted patients with failed paresthesia-based stimulation: results of a prospective randomized controlled trial. *Neuromodulation* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27186822>
  13. Rabi J, Anitescu M. Late extrusion of an implantable pulse generator of a spinal cord stimulator. *Pain Physician* 2016 19(4):E671-E674 <http://www.ncbi.nlm.nih.gov/pubmed/27228537>
  14. Russo M, Verrills P, Mitchell B, Salmon J, Barnard A, Santarelli D. High frequency spinal cord stimulation at 10 kHz for the treatment of chronic pain: 6-month Australian clinical experience. *Pain Physician* 2016 19(4):267-280 <http://www.ncbi.nlm.nih.gov/pubmed/27228514>
  15. Simopoulos TT, Sharma S, Aher M, Gill JS. The incidence and management of postdural puncture headache in patients undergoing percutaneous lead placement for spinal cord stimulation. *Neuromodulation* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27172329>

**SNS (We believe WIKISTIM offers the most comprehensive list of citations that report primary data for SNS.)**

1. Bielefeldt K. Adverse events of sacral neuromodulation for fecal incontinence reported to the federal drug administration. *World J Gastrointest Pharmacol Ther* 2016 7(2):294-305 <http://www.ncbi.nlm.nih.gov/pubmed/27158546>
2. Bramall A, Chaudhary B, Ahmad J, Shamji MF. Chronic infection of a Brindley sacral nerve root stimulator. *BMJ Case Rep* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/26917791>
3. Brégeon J, Coron E, Da Silva AC, Jaulin J, Aubert P, Chevalier J, Vergnolle N, Meurette G, Neunlist M. Sacral nerve stimulation enhances early intestinal mucosal repair following mucosal injury in a pig model. *J Physiol* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/26939757>
4. Dodds PR, Dodds TJ, Jacoby TL. Bizarre paranoid delusions associated with an implanted surgical

- device. *Conn Med* 2016 80(3):159-161 <http://www.ncbi.nlm.nih.gov/pubmed/27169299>
5. Eftaiha SM, Melich G, Pai A, Marecik SJ, Prasad LM, Park JJ. Sacral nerve stimulation in the treatment of bowel dysfunction from imperforate anus: a case report. *Int J Surg Case Rep* 2016 24:115-118 <http://www.ncbi.nlm.nih.gov/pubmed/27236579>
  6. Patton V, Abraham E, Lubowski DZ. Sacral nerve stimulation for faecal incontinence: medium-term follow-up from a single institution. *ANZ J Surg* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27193192>
  7. Rios LA, Averbeck MA, Franca W, Sacomani CA, Almeida FG, Gomes CM. Initial experience with sacral neuromodulation for the treatment of lower urinary tract dysfunction in Brazil. *Int Braz J Urol* 2016 42(2):312-320 <http://www.ncbi.nlm.nih.gov/pubmed/27176186>
  8. Siegel S, Noblett K, Mangel J, Griebing TL, Sutherland SE, Bird ET, Comiter C, Culkin D, Bennett J, Zylstra S, Kan F, Thiery E. Three-year follow-up results of a prospective, multicenter study in overactive bladder subjects treated with sacral neuromodulation. *Urology* 2016 epub <http://www.ncbi.nlm.nih.gov/pubmed/27131966>
  9. Zuidema X, Breel J, Wille F. S3 dorsal root ganglion/nerve root stimulation for refractory postsurgical perineal pain: technical aspects of anchorless sacral transforaminal lead placement. *Case Rep Neurol Med* 2016 2016:8926578 <http://www.ncbi.nlm.nih.gov/pubmed/27123351>