



# Bipolar Disorder Sentence Database and LexRank Similarity Assessment of Sentences on Lithium Treatment

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## INTRODUCTION:

- The extraction of facts and information from unstructured natural language text such as PubMed abstracts is increasingly recognized as a crucial step for translational biomedical and behavioral research.
- Bipolar disorder (BPD) is a highly heritable, severe and chronic mental illness characterized by episodes of elation and high activity; alternating with periods of low mood and low energy. This condition is less prevalent but more persistent and more impairing than major depressive disorder (MDD).
- A search with the text "Bipolar Disorder" of the PubMed using the MiSearch Adaptive PubMed Tool revealed over 23,000 citations. We assume that these citations contain descriptors relevant to uncovering novel insights into various aspects of Bipolar Disorder.

## METHODS:

- We have developed a software tool that splits the Title and Abstract text in PubMed XML files into sentences.
- We implemented this software on a set of PubMed citations annotated with the MeSH term "Bipolar Disorder".

## RESULTS:

- The database was developed to support a study on the Genetic Predisposition of African-American Women to Bipolar Disorder and Substance Abuse.
- Thus, we designed use cases to identify sentences and then abstracts that could guide further studies. Searches with the following keywords: female, genetic, woman, and women retrieved 1404, 2730, 267 and 1808 sentences respectively.

**BPD – Bipolar Disorder Sentence Database**

Database of Sentences Derived from PubMed Citations linked to Bipolar Disorder

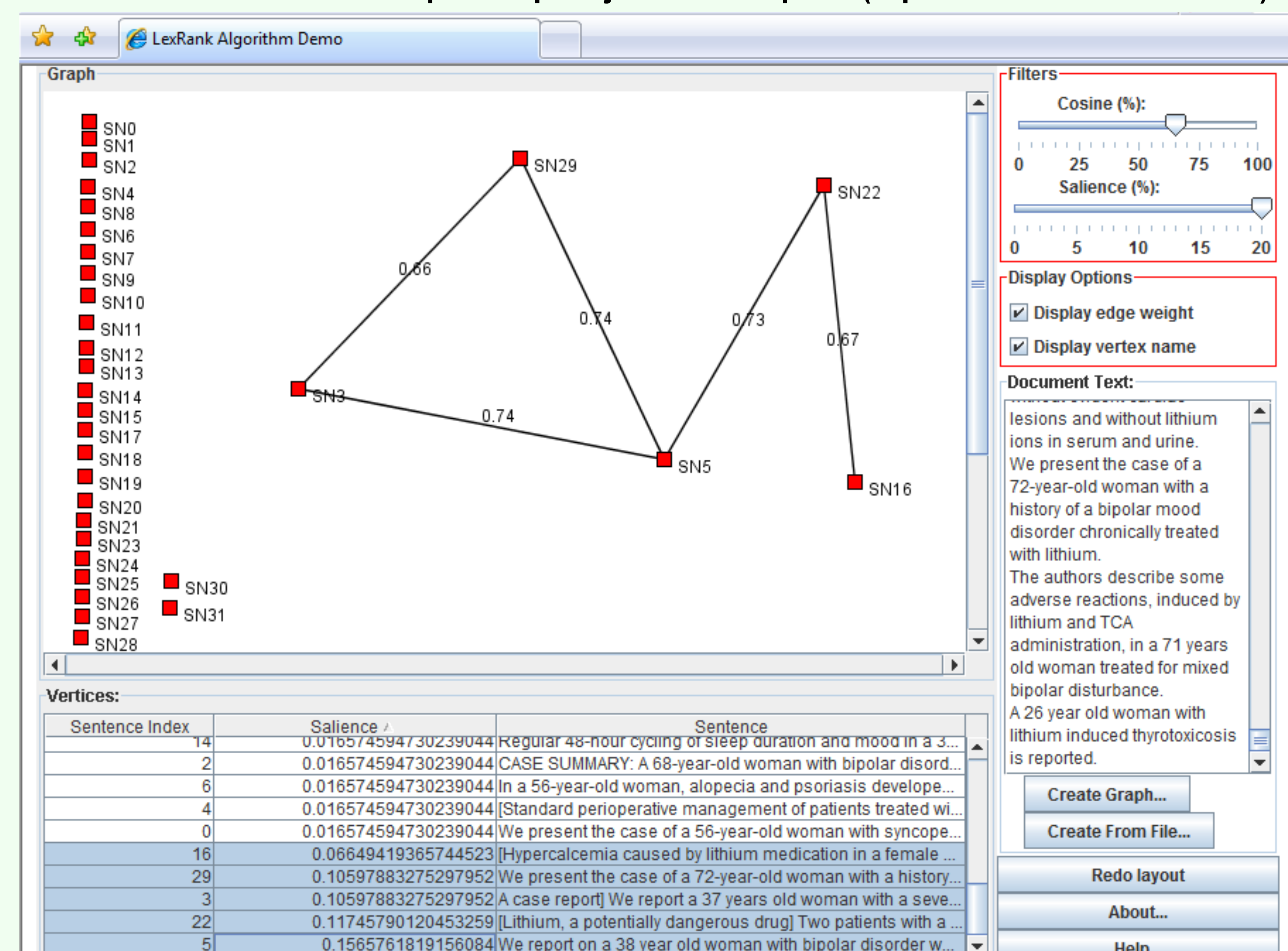
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**BPD: Bipolar Disorder Sentence Database**

Collection of datasets of sentences derived from PubMed Abstracts on Bipolar Disorder

#	Sentence Identifier (sort)	Sentence Text	PMID (sort)
1	7189081_9	Lithium is not recommended for the average woman with PMTS.	7189081
2	8792913_2	We present the case of a 56-year-old woman with syncope and sinus node dysfunction after long-term lithium therapy.	8792913
3	2102674_2	A woman developed rigidity, autonomic instability and altered consciousness after taking an overdose of trifluoperazine and carbamazepine.	2102674
4	17548982_4	CASE REPORT: We describe a 30-year-old asthenic bipolar woman who, in 1997, had a Harrington compression assembly stabilizer fitted for spinal tuberculosis and who, between 2000 and 2004, received 3 courses of modified ECT with a total of 28 treatments.	17548982
5	10800554_1	[Successful treatment of an elderly woman after stubborn resistance]	10800554
6	7250912_1	Woman displays manic symptoms after separation from lover.	7250912
7	17099577_1	[Epidemiological specificity and clinical aspects of depression in the woman]	17099577
8	7478078_2	A case report] A lethal case of neuroleptic malignant syndrome in a 42-year-old woman with a history of bipolar psychiatric disorder under treatment with haloperidol is reported.	7478078
9	16042676_1	Profound weight loss associated with reboxetine use in a 44-year-old woman.	16042676
10	16042676_2	We report a case of significant weight loss experienced by a 44-year-old Caucasian woman treated with reboxetine.	16042676
11	16042676_6	The strongest evidence linking reboxetine to this woman's weight loss laid in the fact that the re-introduction of the drug subsequently caused a similar negative impact in her BMI.	16042676
12	16446616_2	We report the case of a woman with a postpartum mania episode with psychotic features induced by bromocriptine.	16446616
13	15383138_2	AIMS/OBJECTIVES: To evaluate lamotrigine in a woman with a 30-year history of treatment-resistant menstrually-entrained rapid cycling bipolar II disorder with follicular phase depressive and luteal phase mood elevation symptoms.	15383138
14	3697900_2	Ten patients [9 men and 1 woman; mean age 42.4 +/- 8.5 (+/- SD) years] who were smokers and who suffered the complications of self-induced water intoxication and psychosis (SIWIP) (8 patients with schizophrenic disorders, 1 patient with manic-depressive illness, 1 patient with	3697900

A total of 125,988 sentences were obtained and can be queried using keywords and PubMed identifiers at <http://compbio.jsums.edu/bpdsd> (Bipolar Sentence Database)



Subsets of sentences were further analyzed for co-occurrence of descriptors such as alcohol, comorbid and substance. Filtering the LexRank Graph with the Cosine and Saliency measures resulted in five significantly similar sentences including those from abstracts on case reports of side-effects of long-term lithium treatment in women (PMID:15730030; PMID: 11050737).

## FUTURE WORK:

- Evaluating and Improving the PubMed Sentence Splitting Tool.
- Implementing LexRank algorithm to summarize results from queries.