



## PubPharm: from informatics research to search tools for pharmacyspecific literature

Draheim, C.<sup>1</sup>; Keßler, K.<sup>1</sup>; Kroll, H.<sup>2</sup>; Wawrzinek, J.<sup>2</sup>; Wulle, S.<sup>1</sup>; Balke, W.-T.<sup>2</sup>; Stump, K.<sup>1</sup> <sup>1</sup> Universitätsbibliothek & <sup>2</sup> Institut für Informationssysteme | Technische Universität Braunschweig Fachinformationsdienst (FID) Pharmazie - PubPharm | pubpharm@tu-braunschweig.de | Phone +49 (0) 531 / 391-5046 or -5027

PubPharm Search Platform

Unique Characteristics



PubPharm is a free pharmacy-specific search platform. • PubPharm contains more than 55 million references • Including 29 million Medline (PubMed) publications





- Content beyond Medline
  - Journal articles from adjacent scientific disciplines (e.g. chemistry)
  - Pharmaceutical books
  - (e-books, dissertations)
  - Conference papers
  - Information on clinical trials
- Full text access to more than 50 journals (licensed by FID Pharmazie)
  - 48 Campus licences for universities with pharmaceutical institutes
  - Supported by DFG funding

• For all references in PubPharm: Availability check (personalised based on location)



• Structure search including substructure and similarity search • Filter functions



### Innovative Search Tools

## Development of Search Tools

Linking semantic fingerprints of literature – from simple neural embeddings towards contextualized pharmaceutical networks

Artificial intelligence (AI) can be used to predict new drug-disease associations (DDA)

- Problem: How to explain DDA predicted by AI?
- Hypothesis: Network views can help understand complex associations
- Result: Network views of all related (and predicted) DDA

### **Process Overview**

AI learning on documents (e.g. PubMed)

#### Learn DDA and build network view

Search for active substance and explore learned network view



Semantic facettation in pharmaceutical collections using deep learning for active substance contextualization

#### **Process Overview**





When searching for a drug substance, PubPharm returns lists of semantically related substances, diseases and genes.

#### **References:**

Wawrzinek J, Balke W-T. Semantic Facettation in Pharmaceutical Collections Using Deep Learning for Active Substance Contextualization. In International Conference on Asian Digital Libraries. Springer, Cham, 2017; 41-53. Stump K, Balke W-T, Keßler K, Krüger A T, Wawrzinek J, Wulle S. PubPharm – Der Fachinformationsdienst Pharmazie. PHARMAKON 2018; 6(4):260267.

# www.pubpharm.de



DFG Deutsche Forschungsgemeinschaft