

Cytokine Graph Database

Borna Bešić, Dilmurat Yusuf

Bioinformatics Group

Albert-Ludwigs-Universität, Freiburg

October 26, 2018

Overview

1 Introduction

2 What?

3 How?

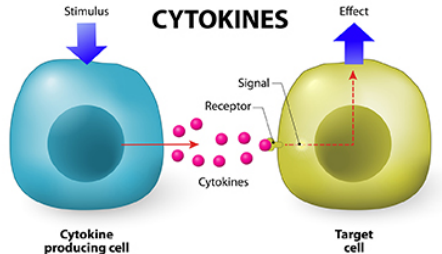
4 Why?

5 Demo

6 Next steps

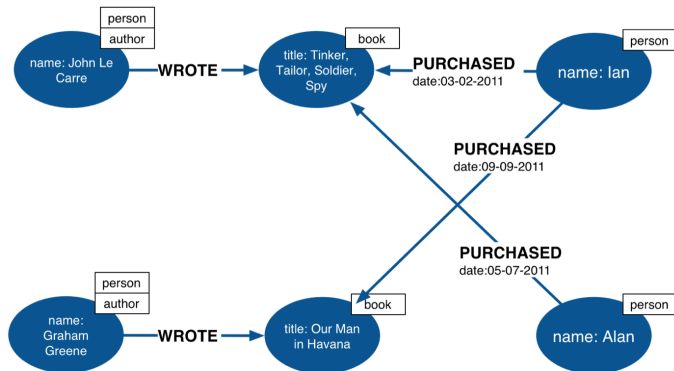
Cytokines

- Molecular messengers between cells
- Interact with cells of the immune system
- Regulate the body's response to disease and infection
- Mediate normal cellular processes in the body



Graph databases

- Nodes
- **Directed** edges / relationships
- Properties



Overview

1 Introduction

2 What?

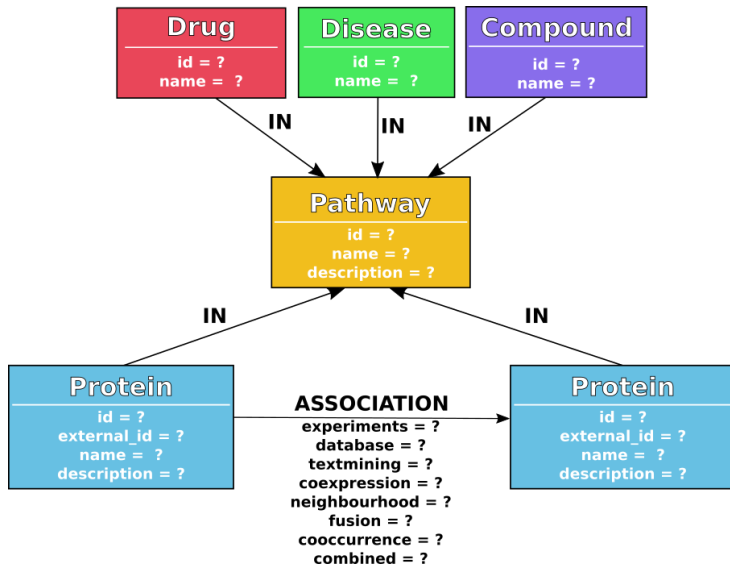
3 How?

4 Why?

5 Demo

6 Next steps

Graph database scheme



Overview

- 1 Introduction
- 2 What?
- 3 How?**
- 4 Why?
- 5 Demo
- 6 Next steps



- STRING

- proteins
- protein - protein associations



- KEGG PATHWAY

- pathways
 - compounds
 - drugs
 - diseases



Overview

- 1 Introduction
- 2 What?
- 3 How?
- 4 Why?**
- 5 Demo
- 6 Next steps

What is the point?

- Drug discovery
- ...

Overview

- 1 Introduction
- 2 What?
- 3 How?
- 4 Why?
- 5 Demo**
- 6 Next steps

(demo)

Overview

- 1 Introduction
- 2 What?
- 3 How?
- 4 Why?
- 5 Demo
- 6 Next steps**

Next steps

- Extend the database
 - Classes of pathways
 - Protein - protein actions
 - [KEGG DRUG](#)
 - [KEGG DISEASE](#)
 - [KEGG COMPOUND](#)
- Other species
- All proteins
- Web server
- Machine learning

Thanks :)

<https://backofenlab.github.io/cytokine-graph-db/>
<https://github.com/BackofenLab/cytokine-graph-db>