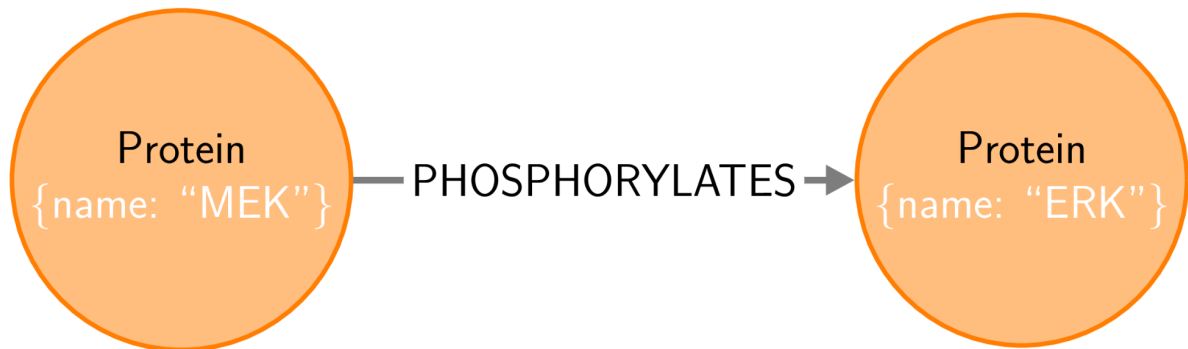


SupplementaryFile 1 (SF1): Two types of graph models: RDF and LPG.

A

```
subject: http://www.example.org/MEK
predicate: http://www.example.org/phosphorylates
object: http://www.example.org/ERK
```

B



Supplementary Figure 1: Two types of graph models: RDF and LPG. This example shows how the phosphorylation of extracellular signal-regulated kinase (ERK) by mitogen-activated protein kinase kinase (MEK) can be modeled under the two types of graph models. This process is a single step of a phosphorylation cascade involved in many different signaling pathways, including G protein coupled receptor-activated pathways and cell cycle regulation. **A.** An example of an RDF triple stating "MEK phosphorylates ERK". The triple is composed of a subject ("MEK"), a predicate ("phosphorylates"), and an object ("ERK"), each identified using an IRI (in this case a URL). **B.** An LPG example, representing the same information as in A. Nodes are represented with circles. Both nodes are labeled as "Protein", and have one property with the key "name". The relationship in the graph is represented with an edge, where the type is "PHOSPHORYLATES". In this example, the relationship (edge) does not have a property, but if needed, it can store additional information such as cardinality, cell type, etc.