

# WikiPathways RDF Interactions

Andra Waagmeester

2013-09-24

## Contents

<b>1</b>	<b>Line</b>	<b>4</b>
1.1	Pathway snippet . . . . .	4
1.2	Description . . . . .	4
1.3	GPML . . . . .	4
1.4	RDFSschema . . . . .	4
1.5	RDF snippet . . . . .	4
<b>2</b>	<b>Arrow</b>	<b>5</b>
2.1	Pathway snippet . . . . .	5
2.2	Description . . . . .	5
2.3	GPML . . . . .	5
2.4	RDFSschema . . . . .	5
2.5	RDF snippet . . . . .	5
<b>3</b>	<b>TBar</b>	<b>6</b>
3.1	Pathway snippet . . . . .	6
3.2	Description . . . . .	6
3.3	GPML . . . . .	6
3.4	RDFSschema . . . . .	6
3.5	RDF snippet . . . . .	6
<b>4</b>	<b>Receptor</b>	<b>7</b>
4.1	Pathway snippet . . . . .	7
4.2	Description . . . . .	7
4.3	GPML . . . . .	7
4.4	RDFSschema . . . . .	7
4.5	RDF snippet . . . . .	7
<b>5</b>	<b>LigandSquare</b>	<b>8</b>
5.1	Pathway snippet . . . . .	8
5.2	Description . . . . .	8
5.3	GPML . . . . .	8
5.4	RDFSschema . . . . .	8
5.5	RDF snippet . . . . .	8

<b>6</b>	<b>ReceptorSquare</b>	<b>9</b>
6.1	Pathway snippet . . . . .	9
6.2	Description . . . . .	9
6.3	GPML . . . . .	9
6.4	RDFSschema . . . . .	9
6.5	RDF snippet . . . . .	9
<b>7</b>	<b>LigandRound</b>	<b>10</b>
7.1	Pathway snippet . . . . .	10
7.2	Description . . . . .	10
7.3	GPML . . . . .	10
7.4	RDFSschema . . . . .	10
7.5	RDF snippet . . . . .	10
<b>8</b>	<b>ReceptorBound</b>	<b>11</b>
8.1	Pathway snippet . . . . .	11
8.2	Description . . . . .	11
8.3	GPML . . . . .	11
8.4	RDFSschema . . . . .	11
8.5	RDF snippet . . . . .	11
<b>9</b>	<b>MimNecessaryStimulation</b>	<b>12</b>
9.1	Pathway snippet . . . . .	12
9.2	Description . . . . .	12
9.3	GPML . . . . .	12
9.4	RDFSschema . . . . .	12
9.5	RDF snippet . . . . .	12
<b>10</b>	<b>MimBinding</b>	<b>13</b>
10.1	Pathway snippet . . . . .	13
10.2	Description . . . . .	13
10.3	GPML . . . . .	13
10.4	RDFSschema . . . . .	13
10.5	RDF snippet . . . . .	13
<b>11</b>	<b>MimConversion</b>	<b>14</b>
11.1	Pathway snippet . . . . .	14
11.2	Description . . . . .	14
11.3	GPML . . . . .	14
11.4	RDFSschema . . . . .	14
11.5	RDF snippet . . . . .	14
<b>12</b>	<b>MimStimulation</b>	<b>15</b>
12.1	Pathway snippet . . . . .	15
12.2	Description . . . . .	15
12.3	GPML . . . . .	15
12.4	RDFSschema . . . . .	15
12.5	RDF snippet . . . . .	15

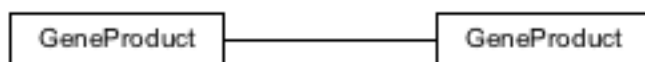
<b>13 MimModification</b>	<b>16</b>
13.1 Pathway snippet . . . . .	16
13.2 Description . . . . .	16
13.3 GPML . . . . .	16
13.4 RDFSchema . . . . .	16
13.5 RDF snippet . . . . .	16
<b>14 MimCatalysis</b>	<b>17</b>
14.1 Pathway snippet . . . . .	17
14.2 Description . . . . .	17
14.3 GPML . . . . .	17
14.4 RDFSchema . . . . .	17
14.5 RDF snippet . . . . .	17
<b>15 MimInhibition</b>	<b>18</b>
15.1 Pathway snippet . . . . .	18
15.2 Description . . . . .	18
15.3 GPML . . . . .	18
15.4 RDFSchema . . . . .	18
15.5 RDF snippet . . . . .	18
<b>16 MimCleavage</b>	<b>19</b>
16.1 Pathway snippet . . . . .	19
16.2 Description . . . . .	19
16.3 GPML . . . . .	19
16.4 RDFSchema . . . . .	20
16.5 RDF snippet . . . . .	20
<b>17 MimCovalentBond</b>	<b>21</b>
17.1 Pathway snippet . . . . .	21
17.2 Description . . . . .	21
17.3 GPML . . . . .	21
17.4 RDFSchema . . . . .	21
17.5 RDF snippet . . . . .	21
<b>18 MimBranchingLeft</b>	<b>22</b>
18.1 Pathway snippet . . . . .	22
18.2 Description . . . . .	22
18.3 GPML . . . . .	22
18.4 RDFSchema . . . . .	22
18.5 RDF snippet . . . . .	22
<b>19 MimBranchingRight</b>	<b>23</b>
19.1 Pathway snippet . . . . .	23
19.2 Description . . . . .	23
19.3 GPML . . . . .	23
19.4 RDFSchema . . . . .	23
19.5 RDF snippet . . . . .	23

<b>20 MimTranscriptionTranslation</b>	<b>24</b>
20.1 Pathway snippet . . . . .	24
20.2 Description . . . . .	24
20.3 GPML . . . . .	24
20.4 RDFSschema . . . . .	24
20.5 RDF snippet . . . . .	24
<b>21 MimGap</b>	<b>25</b>
21.1 Pathway snippet . . . . .	25
21.2 Description . . . . .	25
21.3 GPML . . . . .	25
21.4 RDFSschema . . . . .	25
21.5 RDF snippet . . . . .	25

# 1 Line

## 1.1 Pathway snippet

**Title:** Line



## 1.2 Description

## 1.3 GPML

```

<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" />
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>

```

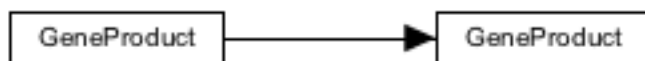
## 1.4 RDFSschema

## 1.5 RDF snippet

## 2 Arrow

### 2.1 Pathway snippet

Title: Arrow



### 2.2 Description

### 2.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="Arrow" />
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

### 2.4 RDFSchem

### 2.5 RDF snippet

## 3 TBar

### 3.1 Pathway snippet

Title: TBar



### 3.2 Description

### 3.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="TBar" />
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

### 3.4 RDFSchema

### 3.5 RDF snippet

## 4 Receptor

### 4.1 Pathway snippet

Title: Receptor



### 4.2 Description

### 4.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="Receptor
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

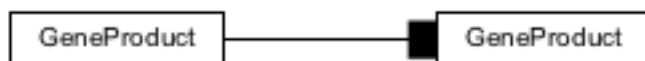
### 4.4 RDFSchema

### 4.5 RDF snippet

## 5 LigandSquare

### 5.1 Pathway snippet

**Title:** Ligand Square



### 5.2 Description

### 5.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="LigandS
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

### 5.4 RDFSchem

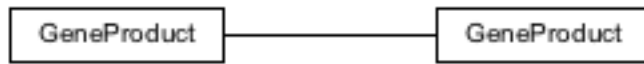
### 5.5 RDF snippet



## 6 ReceptorSquare

### 6.1 Pathway snippet

Title: Receptor Square



### 6.2 Description

### 6.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="Receptor
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

### 6.4 RDFSchema

### 6.5 RDF snippet

## 7 LigandRound

### 7.1 Pathway snippet

**Title:** Ligand Round



### 7.2 Description

### 7.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<Interaction GraphId="ide5adf9e2">
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="LigandRound" />
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

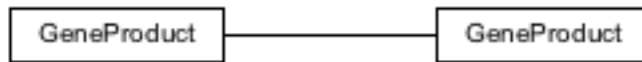
### 7.4 RDFSchema

### 7.5 RDF snippet

## 8 ReceptorBound

### 8.1 Pathway snippet

**Title:** Receptor Bound



### 8.2 Description

### 8.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction GraphId="ide5adf9e2">
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="Receptor
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

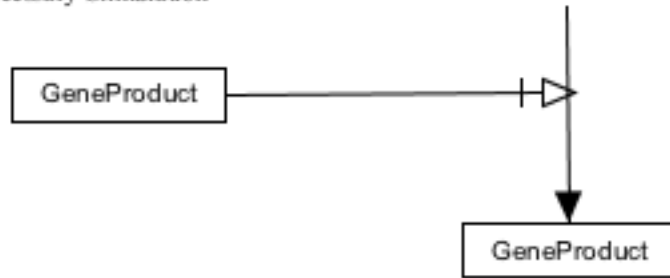
### 8.4 RDFSchema

### 8.5 RDF snippet

## 9 MimNecessaryStimulation

### 9.1 Pathway snippet

**Title:** Necessary Stimulation



### 9.2 Description

An interaction where the controller entity is necessary for the controlled interaction to proceed.

### 9.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="257.07899881996894" CenterY="107.10559244780143" Width="80.0" Height
  <Xref Database="" ID="" />
</DataNode>
<Interaction GraphId="idbd55299a">
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="256.44825956186264" Y="48.647555704687065" GraphRef="f8e7c" RelX="0.0" RelY
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="256.02776672312507" Y="16.34219787594415" />
    <Point X="257.07899881996894" Y="97.10559244780143" GraphRef="fbc03" RelX="0.0" RelY=
    <Anchor Position="0.4" Shape="None" GraphId="f8e7c" />
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

### 9.4 RDFSchem

### 9.5 RDF snippet

## 10 MimBinding

### 10.1 Pathway snippet

**Title:** Binding



### 10.2 Description

A complex physical entity created as a result of a binding interaction between two entities (e.g. a protein complex).

Current representation doesn't comply with the MIM Binding description see [http://discover.nci.nih.gov/mim/formal\\_mim\\_s](http://discover.nci.nih.gov/mim/formal_mim_s)

### 10.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="mim-bin
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

### 10.4 RDFSchema

### 10.5 RDF snippet

## 11 MimConversion

### 11.1 Pathway snippet

**Title:** Conversion



### 11.2 Description

An interaction in which one entity is transformed into one or more other entities (e.g. the conversion of ATP to cyclical-AMP).

### 11.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="mim-con
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

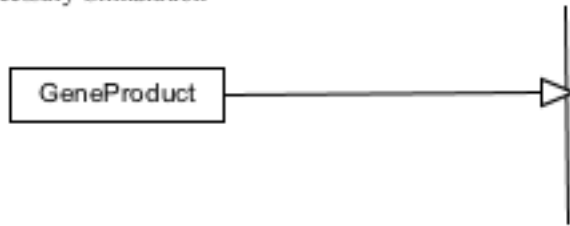
### 11.4 RDFSchema

### 11.5 RDF snippet

## 12 MimStimulation

### 12.1 Pathway snippet

**Title:** Necessary Stimulation



### 12.2 Description

Enhancement of the velocity or extent of a reaction or contingency by the controller entity.

### 12.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<Interaction GraphId="idbd55299a">
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="256.44825956186264" Y="48.647555704687065" GraphRef="f8e7c" RelX="0.0" RelY
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="256.02776672312507" Y="16.34219787594415" />
    <Point X="257.07899881996894" Y="97.10559244780143" />
    <Anchor Position="0.4" Shape="None" GraphId="f8e7c" />
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

### 12.4 RDFSchema

### 12.5 RDF snippet

## 13 MimModification

### 13.1 Pathway snippet

**Title:** Modification



### 13.2 Description

An asymmetric covalent non-reversible binding reaction (e.g. phosphorylation and acetylation) where one of the substrates must be a modifier physical entity.

### 13.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="mim-moc
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

### 13.4 RDFSchema

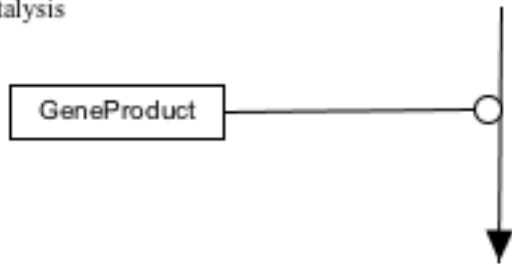
### 13.5 RDF snippet



## 14 MimCatalysis

### 14.1 Pathway snippet

**Title:** Catalysis



### 14.2 Description

An interaction where the controller entity increases the rate of the controlled reaction.

### 14.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<Interaction GraphId="id9cfcb804">
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="232.11654272434583" Y="48.647555704687065" GraphRef="e00f2" RelX="0.0" RelY
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="232.4223697912057" Y="10.894798583962768" />
    <Point X="231.657802124056" Y="105.2766913857735" ArrowHead="Arrow" />
    <Anchor Position="0.4" Shape="None" GraphId="e00f2" />
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

### 14.4 RDFSchema

### 14.5 RDF snippet

## 15 MimInhibition

### 15.1 Pathway snippet

**Title:** Inhibition



### 15.2 Description

An interaction where a controller entity causes a decrease in the velocity or extent of controlled reaction or contingency; the probability of the controlled interaction occurring remains greater than 0.

### 15.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="TBar" />
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

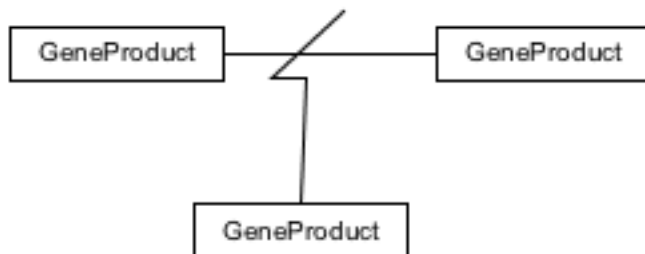
### 15.4 RDFSchema

### 15.5 RDF snippet

## 16 MimCleavage

### 16.1 Pathway snippet

**Title:** Cleavage



### 16.2 Description

The scission of a covalent bond or the separation of connections between entity features.

### 16.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="b4237" Type="GeneProduct">
  <Graphics CenterX="157.06667958546333" CenterY="115.30328501360596" Width="80.0" Height
  <Xref Database="" ID="" />
</DataNode>
<Interaction GraphId="ide9eb61d3">
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="mim-cov
    <Anchor Position="0.4" Shape="None" GraphId="d22c8" />
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="157.06667958546333" Y="105.30328501360596" GraphRef="b4237" RelX="0.0" RelY
    <Point X="160.0" Y="49.0" GraphRef="d22c8" RelX="0.0" RelY="0.0" ArrowHead="mim-cleav
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

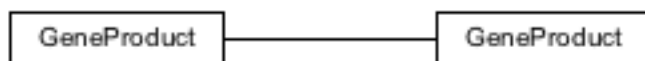
## 16.4 RDFSchema

## 16.5 RDF snippet

## 17 MimCovalentBond

### 17.1 Pathway snippet

**Title:** Covalent Bond



### 17.2 Description

No description found in the Mim documentation ([http://discover.nci.nih.gov/mim/formal\\_mim\\_spec.pdf](http://discover.nci.nih.gov/mim/formal_mim_spec.pdf))

### 17.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="mim-cov
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

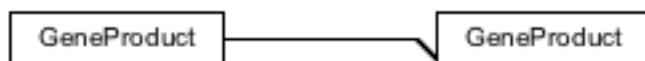
### 17.4 RDFSchema

### 17.5 RDF snippet

## 18 MimBranchingLeft

### 18.1 Pathway snippet

**Title:** Branching Left



### 18.2 Description

A connection point for two interaction lines [TO DISCUSS]

### 18.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="mim-bran
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

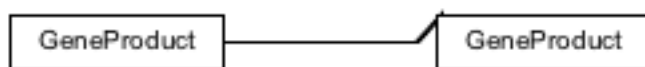
### 18.4 RDFSchema

### 18.5 RDF snippet

## 19 MimBranchingRight

### 19.1 Pathway snippet

**Title:** Branching Right



### 19.2 Description

A connection point for two interaction lines [DO DISCUSS]

### 19.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="mim-bran
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

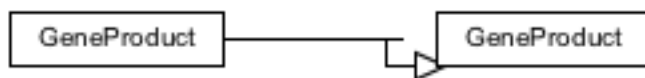
### 19.4 RDFSchema

### 19.5 RDF snippet

## 20 MimTranscriptionTranslation

### 20.1 Pathway snippet

**Title:** Transcription Translation



### 20.2 Description

A type of production without loss that involves a template (e.g. the polymerization of a nucleic acid macromolecule from a nucleic acid macromolecule template). The template reaction glyph should be used to describe transcription or translation, but the glyph itself is insufficient to distinguish between the two biological processes.

### 20.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="mim-tra
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

### 20.4 RDFSchema

### 20.5 RDF snippet



## 21 MimGap

### 21.1 Pathway snippet

**Title:** Gap



### 21.2 Description

Is not defined in [http://discover.nci.nih.gov/mim/formal\\_mim\\_spec.pdf](http://discover.nci.nih.gov/mim/formal_mim_spec.pdf)

### 21.3 GPML

```
<DataNode TextLabel="GeneProduct" GraphId="ceece" Type="GeneProduct">
  <Graphics CenterX="88.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Font
  <Xref Database="" ID="" />
</DataNode>
<DataNode TextLabel="GeneProduct" GraphId="fbc03" Type="GeneProduct">
  <Graphics CenterX="248.0" CenterY="49.0" Width="80.0" Height="20.0" ZOrder="32768" Fon
  <Xref Database="" ID="" />
</DataNode>
<Interaction>
  <Graphics ZOrder="12288" LineThickness="1.0">
    <Point X="128.0" Y="49.0" GraphRef="ceece" RelX="1.0" RelY="0.0" />
    <Point X="208.0" Y="49.0" GraphRef="fbc03" RelX="-1.0" RelY="0.0" ArrowHead="mim-gap"
  </Graphics>
  <Xref Database="" ID="" />
</Interaction>
```

### 21.4 RDFSchema

### 21.5 RDF snippet