Create new type in cTAKES

Make modification to the following files:

1. Create a variable for the new type

In */ctakes/ctakes-dictionary-lookup-fast/src/main/java/org/apache/ctakes/dictionary/lookup2/util/SemanticUtil.java*

Under *SemanticUtil*, create a variable for the type and define the associated TUIs

Example

```
static private final String[] GENE = {
"T028","T085","T086","T087","T088" };  // TUIs related to that
type

Create a new set, which uses a hash table, for the newly defined
type

static private final Collection<String> GENE_TUIS = new
HashSet<>( Arrays.asList( GENE ) );
```

Associate the ctakes group id with their TUIs,

Under *getTuiSemanticGroupId*, add a case to the "if-else" block

Example

```
else if ( GENE_TUIS.contains( tui ) ) { //**
   return CONST.NE_TYPE_ID_GENE;  // or an integer, e.g. 11
}
```

2. Add new cases in the switch block inside the term consumer so that it will identify the annotated terms

In */ctakes/ctakes-dictionary-lookup-fast/src/main/java/org/apache/ctakes/dictionary/lookup2/consumer/DefaultTermConsumer.java*

In *createSemanticAnnotation*, add a new case

Example

```
case NE_TYPE_ID_GENE: {   //defined in CONST.java
            return new GeneMention( jcas );
        }
```

3. Constants are defined in
/ctakes/ctakes-type-system/src/main/java/org/apache/ctakes/typesystem/type/constants/CONST.java

4. Add new type to cTAKES' type system,

In */ctakes/ctakes-type-system/src/main/resources/org/apache/ctakes/typesystem/types/TypeSystem.xml*
Define the new type within the following

Example in TypeSystem.xml

```
<typeSystemDescription
xmlns="http://uima.apache.org/resourceSpecifier">
  <types>
….
….
      <typeDescription>
      <name>org.apache.ctakes.typesystem.type.textsem.GeneMention
      </name>
      <description>Corresponds to the UMLS Gene or Genome
      semantic group</description>
      <supertypeName>org.apache.ctakes.typesystem.type.textsem.En
      tityMention</supertypeName>
      <features>
      <featureDescription>
      <name>entity</name>
      <description/>
      <rangeTypeName>org.apache.ctakes.typesystem.type.refsem.Ent
      ity</rangeTypeName>
      </featureDescription>
      </features>
      </typeDescription>

….
….
  </types>
</typeSystemDescription>
```


5. Once all the changes are made, generate two new jar files from these directories (below) to put in *{binary-ctakes-directory}/lib/*

- */ctakes/ctakes-dictionary-lookup-fast/*
- */ctakes/ctakes-type-system/*

Modify the pom files of their respective directories to use the new jar files

Changed the version name for common type system in */ctakes/ctakes-type-system/pom.xml:*

Example
```
<name>Apache cTAKES common type system</name>
<description>Defines the cTAKES type system UIMA
annotation classes.</description>
<version>3.2.3-SNAPSHOT-selina</version>
```

Changed dependency name for ctakes-type-system in */ctakes/ctakes-dictionary-lookup-fast/pom.xml:*

Example
```
<dependency>
        <groupId>org.apache.ctakes</groupId>
        <artifactId>ctakes-type-system</artifactId>
        <version>3.2.3-SNAPSHOT-selina</version>
</dependency>
```

6. Generate two new jar files from these directories to put in binary-ctakes-directory/lib/

```
$ cd /ctakes/ctakes-dictionary-lookup-fast/
$ mvn package
$ cd target
$ cp ctakes-dictionary-lookup-fast-3.2.3-SNAPSHOT.jar
{binary-ctakes-directory}/lib/.

$ cd /ctakes/ctakes-type-systemmvn package/
$ mvn package
$ cd target
$ cp ctakes-type-system-3.2.3-SNAPSHOT-selina.jar {binary-
ctakes-directory}/lib/.
```