# **ExperimentDB Documentation**

Release 0.2.dev

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## **EXPERIMENTOB INSTALLATION**

## 1.1 Configuration

ExperimentDB requires both a database and a webserver to be set up. Ideally, the database should be hosted separately from the webserver and ExperimentDB installation, but this is not necessary, as both can be used from the same server. If you are using a remote server for the database, it is best to set up a user for this database that can only be accessed from the webserver. If you want to set up several installations (ie for different users or different laboratories), you need separate databases and ExperimentDB installations for each. You will also need to set up the webserver with different addresses for each installation.

## 1.2 Software Dependencies

- 1. **ExperimentDB source code**. Download from one of the following:
- 1. http://github.com/davebridges/ExperimentDB/downloads for the current release
- 2. http://github.com/davebridges/ExperimentDB for the source code
- 3. from pypi by entering:

```
pip install experimentdb
```

Downloading and/or unzipping will create a directory named ExperimentDB. You can update to the newest revision at any time either using git or downloading and re-installing the newer version. Changing or updating software versions will not alter any saved data, but you will have to update the localsettings.py file (described below).

- 2. Python. Requires Version 2.6, is not yet compatible with Python 3.0. Download from Python.
- 3. **Django**. Download from Django. This will be automatically installed if you installed experiment with pip. This will be automatically installed if you installed experiment with pip.
- 4. **Database software**. Typically MySQL is used, but PostgreSQL, Oracle or SQLite can also be used. You also need to install the python driver for this database (unless you are using SQLite, which is internal to Python 2.5+). For more information see Instructions.
- 5. **Biopython Packages**. Download and install from Biopython. This will be automatically installed if you installed experimentdb with pip.
- 6. **South**. Install using pip (**pip install south**). This will be automatically installed if you installed experimentdb with pip.
- 7. **Django Ajax Select**. Install using pip (**pip install django-ajax-selects**). This will be automatically installed if you installed experimentdb with pip.

8. **Python Imaging Library**. Install using pip (**pip install pil**). Available at PIL. This will be automatically installed if you installed experimentdb with pip.

### 1.3 Database Setup

- 1. Create a new database. You need to record the user, password, host and database name. Refer to the database documentation for how to do this with a specific database engine. If you are using SQLite3, you only need to set the engine and the database name. It is recommended to use MySQL.
- 2. Go to localsettings\_empty.py and edit the settings:

```
ENGINE: 'mysql', 'postgresql_psycopg2' or 'sqlite3 depending on the database software used.

NAME: database name

USER: database user. Unless using sqlite3

PASSWORD: database password. Unless using sqlite3

HOST: database host.
```

- 3. Save this file as localsettings.py in the main ExperimentDB directory.
- 4. Run the test client by going into the experimentdb directory and running the following. There should be no errors at this point:

```
python manage.py test
```

5. Generate the initial database tables by entering:

```
python manage.py syncdb
```

6. When asked generate an administrative superuser and set the email and password.

## 1.4 Web Server Setup

You need to set up a server to serve both the django installation and saved files. For the saved files. I recommend using apache for both. The preferred setup is to use Apache2 with mod\_wsgi. The following is a httpd.conf example where the code is placed in /usr/src/django/experimentdb:

If you want to restrict access to these files, change the Allow from all directive to specific domains or ip addresses (for example Allow from 192.168.0.0/99 would allow from 192.168.0.0 to 192.168.0.99)

## 1.5 Final Configuration and User Setup

1. Go to experimentdb/admin/auth/users/ and create users, selecting usernames, full names, password (or have the user set the password) and then choose group permissions.

## PACKAGE DETAILS

The experimentDB is a web-based application for the storage, organization and communication of experimental data with a focus on molecular biology and biochemical data. This application also stores data regarding reagents, including antibodies, constructs and other biomolecules as well as tracks the distribution of reagents. There is also some preliminary interfaces to other web resources.

### 2.1 Data Package

This package describes experimental data.

There are three main models in this package. These models cover experiments, results and protocols. There are model specifications described in experimentdb.models and views described in either experimentdb.views or experimentdb.urls for either custom or generic views respectively

#### **2.1.1 Models**

```
class experimentdb.data.models.Experiment(*args, **kwargs)
    Experiment(experimentID, experiment, assay, experiment_date, comments, public, published, sample_storage)
    exception DoesNotExist
    exception Experiment.MultipleObjectsReturned
    Experiment.antibodies
    Experiment.cellline
    Experiment.chemicals
    Experiment.constructs
    Experiment.get_absolute_url(*moreargs, **morekwargs)
    Experiment.get_next_by_experiment_date(*moreargs, **morekwargs)
    Experiment.get_previous_by_experiment_date(*moreargs, **morekwargs)
    Experiment.project
    Experiment.protein
    Experiment.protocol
    Experiment.researcher
    Experiment.result_set
```

Experiment.siRNA

```
Experiment.strain
     Experiment.subproject
class experimentdb.data.models.Protocol(*args, **kwargs)
     Describes the protocol or protocols used to perform each experiment.
     This model stores information about the protocol used for an experiment.
     An experiment may have several protocols attached to it. For example, one could culture and transfect cells,
     then generate lysates then do some western blots.
     Since migrating to a mediawiki based protocol storage system, the wiki_page attribute indicates the protocol
     wiki page. In this model, the protocol_revision attribute indicates the particular revision of the protocol used
     for that particular experiment. In this way a permalink can be generated to the specific protocol used for a
     particular experiment. To find the protocol revision number, mouse over the permanent link on the protocol and
     record the number at the end of the url.
     exception DoesNotExist
     exception Protocol.MultipleObjectsReturned
     Protocol.experiment_set
     Protocol.get_absolute_url(*moreargs, **morekwargs)
class experimentdb.data.models.Result(*args, **kwargs)
     Result(id, experiment id, conclusions, file1, file2, file3, rawscan1, rawscan2, rawscan3, rawscan4, rawscan5,
     result figure1, result figure2, public, published)
     exception DoesNotExist
     exception Result.MultipleObjectsReturned
     Result.experiment
     Result.get_absolute_url(*moreargs, **morekwargs)
class experimentdb.data.models.Sequencing(*args, **kwargs)
     Sequencing(id, clone_name, construct_id, primer_id, file, sequence, correct, notes, date, sample_number,
     gel number, lane number)
     exception DoesNotExist
     exception Sequencing.MultipleObjectsReturned
     Sequencing.construct
     Sequencing.get next by date(*moreargs, **morekwargs)
     Sequencing.get previous by date (*moreargs, **morekwargs)
     Sequencing.primer
```

#### **2.1.2 Views**

This module provides the views for working with the data package. This module will generate index and detail views for experiments and protocols as well as for the form to enter new results through an experiment. Several other generic views are found in data.urls.

```
experimentdb.data.views.experiment(request, *args, **kwargs)
```

This renders a detailed page of an experiment.

The view will show the experiment, and all associated reagents, proteins, projects and results associated with this object.

```
experimentdb.data.views.experiment_edit(request, *args, **kwargs)
```

Renders a form to edit an experiment and associated formsets for experimental results.

Takes a request in the form of experiment/(experimentID)/edit and returns the experiment\_result\_form.html form.

```
experimentdb.data.views.index(request, *args, **kwargs)
```

This view shows a list of all experiments.

This list is ordered by the experiment date in descending order. This view could potentially be rendered by a generic view.

```
experimentdb.data.views.protocol_detail(request, *args, **kwargs)
```

This renders a view in which a protocol detail page is shown.

This view should be deprecated in favor of a redirection directly to the wiki page for this protocol

```
experimentdb.data.views.protocol_list(request, *args, **kwargs)
```

This renders a view in which all protocols are displayed.

In the case of deprecated protocols (i.e. protocols not marked as active), these are not shown. This view could also be rendered as a generic view.

```
experimentdb.data.views.result_new(request, *args, **kwargs)
```

This renders a form to add a new result.

This view will be sent from a particular experiment and will attach the result to that particular experiment.

### 2.1.3 Lookups

This is a configuration file for the ajax lookups for the data app.

See http://code.google.com/p/django-ajax-selects/ for information about configuring the ajax lookups.

```
class experimentdb.data.lookups.ProtocolLookup
```

This is the generic lookup for protocols.

It is to be used for all protocol requests and directs to the 'protocol' channel.

```
format_item(protocol)
```

the display of a currently selected object in the area below the search box. html is OK

#### format\_result (protocol)

This controls the display of the dropdown menu.

This is set to show the unicode name of the protocol.

```
get_objects(ids)
```

given a list of ids, return the objects ordered as you would like them on the admin page. this is for displaying the currently selected items (in the case of a ManyToMany field)

```
get_query (q, request)
```

This sets up the query for the lookup.

The lookup searches the name of the protocol.

2.1. Data Package 9

#### 2.1.4 URLconfs

This package stores views for the data package.

#### 2.1.5 Tests

## 2.2 Datasets Package

#### 2.2.1 Models

```
class experimentdb.datasets.models.IL10_TNFa_Microarray (*args, **kwargs)
    IL10_TNFa_Microarray(id, ill_ID, Control_1_2008, Control_2_2008, Control_1_2009, Control_2_2009, Con-
    trol_3_2009, Control_4_2009, TNFa_1_2008, TNFa_2_2008, TNFa_1_2009, TNFa_2_2009, TNFa_3_2009,
    TNFa_4_2009, Both_1_2008, Both_2_2008, Both_1_2009, Both_2_2009, Both_3_2009, Both_4_2009,
    IL10 1 2008, IL10 2 2008, IL10 1 2009, IL10 2 2009, IL10 3 2009, IL10 4 2009, GeneSymbol, GeneID,
    GeneName)
    exception DoesNotExist
    exception IL10_TNFa_Microarray.MultipleObjectsReturned
class experimentdb.datasets.models.PI35P2 Binding Screen SP(*args, **kwargs)
    PI35P2_Binding_Screen_SP(id, Gene_Name_id, Gain_of_Function, Loss_of_Function, Candidate, Com-
    ments)
    exception DoesNotExist
    PI35P2_Binding_Screen_SP.Gene_Name
    exception PI35P2_Binding_Screen_SP.MultipleObjectsReturned
    PI35P2_Binding_Screen_SP.get_Gain_of_Function_display(*moreargs,
                                                                                **morek-
                                                                    wargs)
    PI35P2_Binding_Screen_SP.get_Loss_of_Function_display(*moreargs,
                                                                                **morek-
                                                                    wargs)
class experimentdb.datasets.models.SGD_GeneNames(*args, **kwargs)
    SGD_GeneNames(Locus_name, Other_name, Description, Gene_product, Phenotype, ORF_name, SGDID)
    Bait GeneName
    exception DoesNotExist
    SGD GeneNames.Hit GeneName
    exception SGD_GeneNames.MultipleObjectsReturned
    SGD GeneNames.PI3PBP Gene Name
    SGD_GeneNames.get_absolute_url (*moreargs, **morekwargs)
    SGD_GeneNames.sqd_phenotypes_set
class experimentdb.datasets.models.SGD interactions(*args, **kwargs)
    SGD_interactions(id, Feature_Name_Bait, Standard_Gene_Name_Bait_id, Feature_Name_Hit,
                                                                                       Stan-
    dard Gene Name Hit id,
                            Experiment Type,
                                               Genetic or Physical Interaction,
                                                                                      Manu-
    ally_Curated_or_High_Throughput, Notes, Phenotype, Reference, Citation)
    exception DoesNotExist
    exception SGD_interactions.MultipleObjectsReturned
```

```
SGD_interactions.Standard_Gene_Name_Bait
    SGD_interactions.Standard_Gene_Name_Hit
class experimentdb.datasets.models.SGD_phenotypes (*args, **kwargs)
    SGD_phenotypes(id, Feature_Name, Feature_Type, Gene_Name_id, SGDID, Reference, Experiment_Type,
    Mutant Type, Allele, Strain Background, Phenotype, Chemical, Condition, Details, Reporter)
    exception DoesNotExist
    SGD_phenotypes.Gene_Name
    exception SGD_phenotypes.MultipleObjectsReturned
2.2.2 Views
experimentdb.datasets.views.sqd_gene_detail(request, gene)
2.2.3 URLconfs
2.2.4 Tests
2.3 Cloning Package
2.3.1 Models
class experimentdb.cloning.models.Cloning(*args, **kwargs)
    This model stores details about the generation of new recombinant DNA molecules.
    exception DoesNotExist
    exception Cloning.MultipleObjectsReturned
    Cloning.construct
    Cloning.get_absolute_url(*moreargs, **morekwargs)
    Cloning.get_cloning_type_display(*moreargs, **morekwargs)
    Cloning.primer_3prime
    Cloning.primer_5prime
    Cloning.researcher
    Cloning.sequencing
    Cloning.vector
class experimentdb.cloning.models.Mutagenesis(*args, **kwargs)
    This model contains data describing the generation of muationns in clones
```

#### 2.3. Cloning Package

exception DoesNotExist

Mutagenesis.construct

Mutagenesis.antisense primer

exception Mutagenesis.MultipleObjectsReturned

Mutagenesis.get\_absolute\_url(\*moreargs, \*\*morekwargs)

```
Mutagenesis.get_next_by_date_completed(*moreargs, **morekwargs)

Mutagenesis.get_previous_by_date_completed(*moreargs, **morekwargs)

Mutagenesis.protocol

Mutagenesis.researcher

Mutagenesis.sense_primer

Mutagenesis.sequencing

Mutagenesis.template
```

#### 2.3.2 Views

#### 2.3.3 URLconfs

#### 2.3.4 Tests

### 2.4 External Package

#### **2.4.1 Models**

This package contains the model information for the external app.

It defines the structure and behavior of the following models: - Contact - Vendor - Reference

```
class experimentdb.external.models.Contact(*args, **kwargs)
```

This model defines a contact.

This is intended to be a person who is involved in the research program, and may be but it not necessarily a database user. The required fields are first\_name and last\_name.

```
exception DoesNotExist
```

```
exception Contact.MultipleObjectsReturned
Contact.antibody_researcher
Contact.cell_researcher
Contact.chemical_researcher
Contact.cloning_set
Contact.construct_researcher
Contact.experiment_set
Contact.get_absolute_url(*moreargs, **morekwargs)
Contact.laboratory_set
Contact.mutagenesis_set
Contact.primer_researcher
Contact.project_set
Contact.reference_set
```

```
Contact.save()
         The save is over-ridden to slugify the contact field into a slugfield named contactID.
     Contact.strain_researcher
     Contact.subproject_set
     Contact.user
class experimentdb.external.models.Reference(*args, **kwargs)
     This model contains objects of the class reference.
     It is intended to keep track of specific papers that pertain to protocols, experiments or projects.
     The only required field for this model is a title.
     exception DoesNotExist
     exception Reference.MultipleObjectsReturned
     Reference.antibody_set
     Reference.cell set
     Reference.chemical_set
     Reference.construct_set
     Reference.get_absolute_url(*moreargs, **morekwargs)
     Reference.primer set
     Reference.project_set
     Reference.researchers
     Reference.strain_set
     Reference.subproject_set
class experimentdb.external.models.Vendor(*args, **kwargs)
     This model contains objects of the class vendor.
     It is intended to be used to indicate companies from which reagents are obtained. The only required field is
     company.
     exception DoesNotExist
     exception Vendor. MultipleObjectsReturned
     Vendor.antibody_vendor
     Vendor.cell vendor
     Vendor.chemical vendor
     Vendor.construct_vendor
     Vendor.get_absolute_url(*moreargs, **morekwargs)
     Vendor.primer_vendor
     Vendor.save()
         The save is over-ridden to slugify the contact field into a slugfield named contactID.
     Vendor.strain_vendor
```

#### 2.4.2 Views

#### 2.4.3 URLconfs

This folder contains the urlconf redirections for the external app.

There is separate files for vendor, contact and reference urls.

#### **2.4.4 Tests**

```
This package defines the tests for the external app.
It contains model tests for the models: - Vendor - Reference - Contact
There are currently no views associated with these models.
class experimentdb.external.tests.ContactModelTests (methodName='runTest')
     Tests the model attributes of Contact objects contained in the reagents app.
     setUp()
          Instantiate the test client.
     tearDown()
          Depopulate created model instances from test database.
     test_contact_absolute_url()
     test_contact_slugify()
     test_create_contact_minimal()
          This is a test for creating a new primer object, with only the minimum fields being entered
class experimentdb.external.tests.ReferenceModelTests(methodName='runTest')
     Tests the model attributes of Reference objects contained in the reagents app.
     setUp()
          Instantiate the test client.
     tearDown()
          Depopulate created model instances from test database.
     test_create_reference_minimal()
          This is a test for creating a new primer object, with only the minimum fields being entered
     test reference absolute url()
class experimentdb.external.tests.VendorModelTests(methodName='runTest')
     Tests the model attributes of Vendor objects contained in the reagents app.
     setUp()
          Instantiate the test client.
     tearDown()
          Depopulate created model instances from test database.
     test_create_vendor_minimal()
          This is a test for creating a new primer object, with only the minimum fields being entered
     test_vendor_absolute_url()
```

## 2.5 Proteins Package

#### **2.5.1 Models**

```
class experimentdb.proteins.models.Protein(*args, **kwargs)
    Protein(id, name)
    exception DoesNotExist
    exception Protein.MultipleObjectsReturned
    Protein.antibody_set
    Protein.cell set
    Protein.chemical_set
    Protein.construct_set
    Protein.experiment_set
    Protein.get absolute url(*moreargs, **morekwargs)
    Protein.primer set
    Protein.protein_family
    Protein.proteindetail_set
    Protein.strain set
class experimentdb.proteins.models.ProteinDetail(*args, **kwargs)
    ProteinDetail(id, name, protein_id, gene, species_id, geneID, RefSeqProtein, RefSeqProtein_gi, RefSeqNu-
    cleotide, RefSeqNucleotide_gi, WormBaseID, FlyBaseID, SGD_ID, public, published)
    exception DoesNotExist
    exception ProteinDetail.MultipleObjectsReturned
    ProteinDetail.protein
    ProteinDetail.species
class experimentdb.proteins.models.ProteinFamily(*args, **kwargs)
    ProteinFamily(id, name, notes)
    exception DoesNotExist
    exception ProteinFamily.MultipleObjectsReturned
    ProteinFamily.get_absolute_url(*moreargs, **morekwargs)
    ProteinFamily.protein_set
class experimentdb.proteins.models.Species(*args, **kwargs)
    Species(id, common_name, scientific_name, taxonomy_id)
    exception DoesNotExist
    exception Species.MultipleObjectsReturned
    Species.proteindetail_set
```

#### 2.5.2 Views

```
experimentdb.proteins.views.detail(request, *args, **kwargs)
experimentdb.proteins.views.index(request, *args, **kwargs)
experimentdb.proteins.views.protein_isoform_detail(request, *args, **kwargs)
    fetch and parse a genbank protein record
```

#### 2.5.3 Lookups

This is a configuration file for the ajax lookups for the proteins app.

See http://code.google.com/p/django-ajax-selects/ for information about configuring the ajax lookups.

```
class experimentdb.proteins.lookups.ProteinLookup
```

This is the generic lookup for antibodies.

It is to be used for all protein requests and directs to the 'protein' channel.

```
format item(protein)
```

the display of a currently selected object in the area below the search box. html is OK

```
format_result (protein)
```

This controls the display of the dropdown menu.

This is set to show the unicode name of the protein.

```
get_objects(ids)
```

given a list of ids, return the objects ordered as you would like them on the admin page. this is for displaying the currently selected items (in the case of a ManyToMany field)

```
get_query (q, request)
```

This sets up the query for the lookup.

The lookup searches the name of the protein.

#### 2.5.4 URLconfs

```
experimentdb.proteins.urls.restricted_change_protein(request, *args, **kwargs)
experimentdb.proteins.urls.restricted_create_protein(request, *args, **kwargs)
experimentdb.proteins.urls.restricted_delete_protein(request, *args, **kwargs)
experimentdb.proteins.urls.restricted_detail(request, *args, **kwargs)
experimentdb.proteins.urls.restricted_object_list(request, *args, **kwargs)
```

#### 2.5.5 Tests

## 2.6 Reagents Package

#### **2.6.1 Models**

This package describes the models in the reagents app.

The models are ReagentInfo, which is an abstract superclass of: - Primer - Cell - Antibody - Strain - Chemical - Construct

The ReagentInfo class provides generic fields to all the models, while each subclass provides extra specific fields. This package also contains a Selection model, to be used for antibiotic selections, and a specied model, to be used to indicate various species.

```
class experimentdb.reagents.models.Antibody(*args, **kwargs)
```

This model describes antibodies.

The required fields are name and source\_species. This model is a subclass of ReagentInfo.

#### exception DoesNotExist

```
exception Antibody.MultipleObjectsReturned
```

```
Antibody.get_absolute_url(*moreargs, **morekwargs)

Antibody.get_location_display(*moreargs, **morekwargs)

Antibody.get_source_species_display(*moreargs, **morekwargs)

Antibody.protein

Antibody.reference

Antibody.researcher

Antibody.save()

The save is over-ridden to slugify the name field into a slugfield.

Antibody.species

Antibody.vendor
```

class experimentdb.reagents.models.Cell(\*args, \*\*kwargs)

This model describes objects of the class Cell.

This model is intended to be used to store information about mammalian cell lines. The only required field is name. This model is a subclass of ReagentInfo.

#### exception DoesNotExist

```
exception \ \texttt{Cell}. \\ \textbf{MultipleObjectsReturned}
```

```
Cell.cell_line_species

Cell.experiment_set

Cell.get_absolute_url(*moreargs, **morekwargs)

Cell.get_location_display(*moreargs, **morekwargs)

Cell.get_species_display(*moreargs, **morekwargs)

Cell.protein

Cell.reference

Cell.researcher

Cell.save()

The save is over-ridden to slugify the name field into a slugfield.
```

Cell.vendor

```
class experimentdb.reagents.models.Chemical(*args, **kwargs)
    This model describes objects of the class Chemical.
    It is intended to describe chemicals used in experiments. The only required field is name. This model is a
    subclass of ReagentInfo.
    exception DoesNotExist
    exception Chemical.MultipleObjectsReturned
    Chemical.experiment_set
    Chemical.get_absolute_url(*moreargs, **morekwargs)
    Chemical.get_location_display(*moreargs, **morekwargs)
    Chemical.protein
    Chemical.reference
    Chemical.researcher
    Chemical.save()
         The save is over-ridden to slugify the name field into a slugfield.
    Chemical.vendor
class experimentdb.reagents.models.Construct(*args, **kwargs)
    This model describes recombinant DNA objects.
    The only required field is name. It is a subclass of ReagentInfo.
    exception DoesNotExist
    exception Construct.MultipleObjectsReturned
    Construct.constructshipment_set
    Construct.experiment_set
    Construct.final_clone
    Construct.get_absolute_url(*moreargs, **morekwargs)
    Construct.get_location_display(*moreargs, **morekwargs)
    Construct.mutant
    Construct.protein
    Construct.recipient_vector
    Construct.reference
    Construct.researcher
    Construct.save()
         The save is over-ridden to slugify the name field into a slugfield.
    Construct.selection
    Construct.sequencing_set
    Construct.strain_set
    Construct.template
    Construct.vendor
```

```
class experimentdb.reagents.models.Primer(*args, **kwargs)
     Model describing primer objects.
```

These objects can be of any short nucleotide type including primers, siRNA oligos or morpholinos. The required fields are the name and the type. The nonrequired fields include the sequence, the protein, the ordering date and all generic reagent info fields. This is a subclass of the ReagentInfo abstract base class.

#### 3 Primer

#### 5 Primer

```
exception DoesNotExist
```

```
exception Primer.MultipleObjectsReturned
```

```
Primer.antisense_primer
Primer.experiment_set
Primer.get_absolute_url(*moreargs, **morekwargs)
Primer.get_location_display(*moreargs, **morekwargs)
Primer_get_primer_type_display(*moreargs, **morekwargs)
Primer.protein
Primer.reference
Primer.researcher
Primer.save()
    The save is over-ridden to slugify the name field into a slugfield.
Primer.sense_primer
```

```
Primer.sequencing_set
```

Primer.vendor

```
class experimentdb.reagents.models.ReagentInfo(*args, **kwargs)
```

Abstract base model for all reagents, will not be used in isolation, only as part of other models.

This superclass provides several generic fields, available to all reagents. The only required field of all reagents is name. It orders all reagents by name, although this may be over-ridden in the model. It also sets sets their \_\_unicode\_\_ representation to be "name".

#### class Meta

```
ReagentInfo.get_location_display(*moreargs, **morekwargs)
    ReagentInfo.protein
    ReagentInfo.reference
    ReagentInfo.researcher
    ReagentInfo.vendor
class experimentdb.reagents.models.Selection(*args, **kwargs)
```

Model for selection conditions of transformants.

This object has one required field, being **selection**. An optional comments field is also available.

Initial data upon installation includes resistance to ampicillin or kanamycin. Other selective markers should be added at /experimentdb/selection/new

exception DoesNotExist

```
exception Selection.MultipleObjectsReturned
Selection.construct_set
Selection.get_absolute_url(*moreargs, **morekwargs)
Selection.save()
    The save is over-ridden to slugify the selection field into a slugfield.
Selection.strain_set
class experimentdb.reagents.models.Species(*args, **kwargs)
    Model for indicating specific species.
```

The only required field is common\_name. This is used with Strain, Cell and Antibody objects. Currently the species field, with the old choices=SPECIES is present until data can be migrated. Upon installation, initial data is provided for rabbit, mouse, human, yeast and goat species. More species can be added at /experimentdb/species/new.

#### exception DoesNotExist

```
exception Species.MultipleObjectsReturned
Species.antibody_set
Species.cell_set
Species.get_absolute_url(*moreargs, **morekwargs)
Species.save()
The save is over-ridden to slugify the common_name field into a slugfield.
Species.strain_set
class experimentdb.reagents.models.Strain(*args, **kwargs)
Model describing biological strains.
```

This was devised to organize yeast strains, but can be used for bacteria or other organisms as well. The only required field is **name**. This is a subclass of ReagentInfo abstract class

#### exception DoesNotExist

```
exception Strain.MultipleObjectsReturned
Strain.background
Strain.experiment_set
Strain.get_absolute_url(*moreargs, **morekwargs)
Strain.get_location_display(*moreargs, **morekwargs)
Strain.get_species_display(*moreargs, **morekwargs)
Strain.plasmids
Strain.protein
Strain.reference
Strain.researcher
Strain.save()
    The save is over-ridden to slugify the name field into a slugfield.
Strain.selection
Strain.strain set
```

```
Strain.strain_species
Strain.vendor
```

#### 2.6.2 Views

```
experimentdb.reagents.views.antibody lookup(request)
```

A json lookup view for antibodies.

This view takes a get query item and returns a json dictionary of antibody objects matching that name

```
experimentdb.reagents.views.index(request, *args, **kwargs)
```

#### 2.6.3 Lookups

This is a configuration file for the ajax lookups for the reagents app.

See http://code.google.com/p/django-ajax-selects/ for information about configuring the ajax lookups.

```
class experimentdb.reagents.lookups.AntibodyLookup
```

This is the generic lookup for antibodies.

It is to be used for all antibody requests and directs to the 'antibody' channel.

```
format_item(antibody)
```

the display of a currently selected object in the area below the search box. html is OK

```
format_result (antibody)
```

This controls the display of the dropdown menu.

This is set to show the unicode name of the antibody, as well as the vendor and the source species.

```
get_objects(ids)
```

given a list of ids, return the objects ordered as you would like them on the admin page. this is for displaying the currently selected items (in the case of a ManyToMany field)

```
get_query (q, request)
```

This sets up the query for the lookup.

The lookup searches the name of the antibody.

```
class experimentdb.reagents.lookups.CellLineLookup
```

This is the generic lookup for strains.

It is to be used for all cell line requests and directs to the 'cell' channel.

```
format_item(cell)
```

the display of a currently selected object in the area below the search box. html is OK

```
format_result (cell)
```

This controls the display of the dropdown menu.

This is set to show the unicode name of the cell line.

```
get_objects(ids)
```

given a list of ids, return the objects ordered as you would like them on the admin page. this is for displaying the currently selected items (in the case of a ManyToMany field)

```
get_query (q, request)
```

This sets up the query for the lookup.

The lookup searches the name of the cell.

#### class experimentdb.reagents.lookups.ChemicalLookup

This is the generic lookup for chemicals.

It is to be used for all chemical requests and directs to the 'chemical' channel.

#### format\_item(chemical)

the display of a currently selected object in the area below the search box. html is OK

#### format\_result (chemical)

This controls the display of the dropdown menu.

This is set to show the unicode name of the chemical.

#### get\_objects(ids)

given a list of ids, return the objects ordered as you would like them on the admin page. this is for displaying the currently selected items (in the case of a ManyToMany field)

#### get\_query (q, request)

This sets up the query for the lookup.

The lookup searches the name of the chemical.

#### class experimentdb.reagents.lookups.ConstructLookup

This is the generic lookup for constructs.

It is to be used for all construct requests and directs to the 'construct' channel.

#### format\_item(construct)

the display of a currently selected object in the area below the search box. html is OK

#### format result(construct)

This controls the display of the dropdown menu.

This is set to show the unicode name of the construct.

#### get\_objects (ids)

given a list of ids, return the objects ordered as you would like them on the admin page. this is for displaying the currently selected items (in the case of a ManyToMany field)

#### get\_query (q, request)

This sets up the query for the lookup.

The lookup searches the name of the construct.

#### class experimentdb.reagents.lookups.SiRNALookup

This is the generic lookup for siRNA.

It is to be used for all siRNA requests and directs to the 'siRNA' channel This channel will **not** search for all Primer objects, only the ones with primer type="siRNA".

#### format\_item(siRNA)

the display of a currently selected object in the area below the search box. html is OK

#### format\_result (siRNA)

This controls the display of the dropdown menu.

This is set to show the unicode name of the siRNA line.

#### get objects (ids)

given a list of ids, return the objects ordered as you would like them on the admin page. this is for displaying the currently selected items (in the case of a ManyToMany field)

#### get\_query (q, request)

This sets up the query for the lookup.

The lookup searches the name of the siRNA.

#### class experimentdb.reagents.lookups.StrainLookup

This is the generic lookup for strains.

It is to be used for all strain requests and directs to the 'strain' channel.

#### format item(strain)

the display of a currently selected object in the area below the search box. html is OK

#### format\_result (strain)

This controls the display of the dropdown menu.

This is set to show the unicode name of the strain.

#### get\_objects(ids)

given a list of ids, return the objects ordered as you would like them on the admin page. this is for displaying the currently selected items (in the case of a ManyToMany field)

```
get_query (q, request)
```

This sets up the query for the lookup.

The lookup searches the name of the strain.

#### 2.6.4 URLconfs

URLconfs for reagent models.

In general these urls have the names model-list, model-detail, model-new, model-edit and model-delete.

#### 2.6.5 Tests

This file contains tests for the reagents application.

These tests include model and view tests for Strain, Primer, Cell, Antibody, Construct, Chemical, Species and Selection objects.

```
class experimentdb.reagents.tests.AntibodyModelTests(methodName='runTest')
```

Tests the model attributes of Antibody objects contained in the reagents app.

#### setUp()

Instantiate the test client.

#### tearDown()

Depopulate created model instances from test database.

#### test\_antibody\_slugify()

This is a test for the antibody name being correctly slugified

#### test\_create\_antibody\_all\_fields()

This is a test for creating a new antibody object, with only the all fields being entered

```
test_create_antibody_minimal()
```

This is a test for creating a new antibody object, with only the minimum fields being entered

```
class experimentdb.reagents.tests.CellModelTests(methodName='runTest')
```

Tests the model attributes of Cell objects contained in the reagents app.

#### setUp()

Instantiate the test client.

```
tearDown()
          Depopulate created model instances from test database.
     test_cell_line_slugify()
          This is a test for the cell line name being correctly slugified
     test create cell line all fields()
          This is a test for creating a new cell line object, with only the all fields being entered
     test create cell line minimal()
          This is a test for creating a new cell line object, with only the minimum fields being entered
class experimentdb.reagents.tests.ChemicalModelTests (methodName='runTest')
     Tests the model attributes of Chemical objects contained in the reagents app.
     setUp()
          Instantiate the test client.
     tearDown()
          Depopulate created model instances from test database.
     test chemical slugify()
          This is a test for the cell line name being correctly slugified
     test_create_chemical_all_fields()
          This is a test for creating a new chemical object, with only the all fields being entered
     test create chemical minimal()
          This is a test for creating a new chemical object, with only the minimum fields being entered
class experimentdb.reagents.tests.ConstructModelTests(methodName='runTest')
     Tests the model attributes of Construct objects contained in the reagents app.
     setUp()
          Instantiate the test client.
     tearDown()
          Depopulate created model instances from test database.
     test_construct_slugify()
          This is a test for the construct name being correctly slugified
     test create cell line minimal()
          This is a test for creating a new construct object, with only the minimum fields being entered
     test_create_construct_all_fields()
          This is a test for creating a new construct object, with only the all fields being entered
class experimentdb.reagents.tests.PrimerModelTests(methodName='runTest')
     Tests the model attributes of Primer objects contained in the reagents app.
     setUp()
          Instantiate the test client.
     tearDown()
          Depopulate created model instances from test database.
     test create primer all fields()
          This is a test for creating a new primer object, with only the all fields being entered
     test_create_primer_minimal()
          This is a test for creating a new primer object, with only the minimum fields being entered
```

```
test_primer_slugify()
          This is a test for the primer name being correctly slugified
class experimentdb.reagents.tests.SelectionModelTests(methodName='runTest')
     Tests the model attributes of Selection objects contained in the reagents app.
     setUp()
          Instantiate the test client.
     tearDown()
          Depopulate created model instances from test database.
     test_create_selection_all_fields()
          This is a test for creating a new selection object, with only the all fields being entered
     test_create_selection_minimal()
          This is a test for creating a new selection object, with only the minimum fields being entered
     test_selection_slugify()
          This is a test for the cell line name being correctly slugified
class experimentdb.reagents.tests.SpeciesModelTests(methodName='runTest')
     Tests the model attributes of Species objects contained in the reagents app.
     setUp()
          Instantiate the test client.
     tearDown()
          Depopulate created model instances from test database.
     test_create_species_all_fields()
          This is a test for creating a new species object, with only the all fields being entered
     test_create_species_minimal()
          This is a test for creating a new species object, with only the minimum fields being entered
     test_species_slugify()
          This is a test for the cell line name being correctly slugified
class experimentdb.reagents.tests.StrainModelTests(methodName='runTest')
     Tests the model attributes of Strain objects contained in the reagents app.
     setUp()
          Instantiate the test client.
     tearDown()
          Depopulate created model instances from test database.
     test create strain all fields()
          This is a test for creating a new strain object, with only the all fields being entered
     test_create_strain_minimal()
          This is a test for creating a new strain object, with only the minimum fields being entered
     test_strain_slugify()
          This is a test for the cell line name being correctly slugified
```

## 2.7 Sharing Package

#### **2.7.1 Models**

This package defines the database models for for the sharing application.

This application tracks shipments of constructs to other groups.

These tests include the following models: - Institution - Laboratory - Recipient - ConstructShipment

In the terms of this application, ConstructShipments are sent to Recipients, who are in Laboratories at Institutions.

```
class experimentdb.sharing.models.ConstructShipment(*args, **kwargs)
```

This class describes a shipment of constructs.

The required fields are **constructs**, **ship\_date**, **recipient** (who is defined as part of a Laboratory and in turn an Institution).

#### exception DoesNotExist

```
exception ConstructShipment.MultipleObjectsReturned
```

```
ConstructShipment.constructs
```

```
ConstructShipment.get_absolute_url(*moreargs, **morekwargs)
```

```
ConstructShipment.get next by ship date (*moreargs, **morekwargs)
```

ConstructShipment.get\_previous\_by\_ship\_date(\*moreargs, \*\*morekwargs)

ConstructShipment.recipient

```
class experimentdb.sharing.models.Institution(*args, **kwargs)
```

This class defines Institution models.

The only required is **institution**. The institution describes part of the address (city/state/country) the rest is defined under Laboratory.

#### exception DoesNotExist

```
exception Institution.MultipleObjectsReturned
```

```
Institution.get_country_display(*moreargs, **morekwargs)
```

Institution.get\_institution\_type\_display(\*moreargs, \*\*morekwargs)

```
Institution.laboratory_set
```

```
class experimentdb.sharing.models.Laboratory(*args, **kwargs)
```

This class describes groups or laboratories.

This class has two required fields, **principal\_investigator** and **institution**. In this context, a laboratory could be a single person or a group of people at an institution. Typically the recipient of the shipment works at the laboratory. The laboratory may or may not also be a contact, as defined in the external app.

#### exception DoesNotExist

#### exception Laboratory.MultipleObjectsReturned

```
Laboratory.contact
```

Laboratory.institution

Laboratory.recipient set

```
class experimentdb.sharing.models.Recipient(*args, **kwargs)
```

This class describes the recipient of a shipment.

The recipient could be the principal investigator, or a member of their group. The required fields for this model are **first\_name**, **last\_name** and **lab**.

#### exception DoesNotExist

```
exception Recipient.MultipleObjectsReturned
Recipient.constructshipment_set
Recipient.lab
```

#### 2.7.2 Views

#### 2.7.3 URLconfs

```
experimentdb.sharing.urls.change_shipment (request, *args, **kwargs)
experimentdb.sharing.urls.create_shipment (request, *args, **kwargs)
experimentdb.sharing.urls.delete_shipment (request, *args, **kwargs)
experimentdb.sharing.urls.shipment_detail (request, *args, **kwargs)
experimentdb.sharing.urls.shipment_list (request, *args, **kwargs)
```

#### **2.7.4 Tests**

This file contains tests for the sharing application.

These tests include model and view tests for the following models: - Institution - Laboratory - Recipient - Construct-Shipment

```
{\bf class} \ {\bf experimentdb.sharing.tests.ConstructShipmentModelTests} \ ({\it methodName='runTest'}) \\ {\bf Tests} \ {\bf the} \ {\bf model} \ {\bf attributes} \ {\bf of} \ {\bf ConstructShipment} \ {\bf objects} \ {\bf contained} \ {\bf in} \ {\bf the} \ {\bf reagents} \ {\bf app}.
```

#### setUp()

Instantiate the test client.

#### tearDown()

Depopulate created model instances from test database.

```
test_create_construct_shipment_all_fields()
```

This is a test for creating a new construct shipment object, with all fields being entered

```
test_create_construct_shipment_minimal()
```

This is a test for creating a new construct shipment, with only the minimum fields being entered

```
{\bf class} \; {\tt experimentdb.sharing.tests.InstitutionModelTests} \; ({\it methodName='runTest'})
```

Tests the model attributes of Laboratory objects contained in the reagents app.

#### setUp()

Instantiate the test client.

#### tearDown()

Depopulate created model instances from test database.

#### test\_create\_institution\_all\_fields()

This is a test for creating a new institution object, with all fields being entered

## test create institution minimal() This is a test for creating a new institution, with only the minimum fields being entered class experimentdb.sharing.tests.LaboratoryModelTests(methodName='runTest') Tests the model attributes of Laboratory objects contained in the reagents app. setUp() Instantiate the test client. tearDown() Depopulate created model instances from test database. test\_create\_laboratory\_all\_fields() This is a test for creating a new recipient object, with all fields being entered test\_create\_laboratory\_minimal() This is a test for creating a new laboratory, with only the minimum fields being entered class experimentdb.sharing.tests.RecipientModelTests(methodName='runTest') Tests the model attributes of Recipient objects contained in the reagents app. setUp() Instantiate the test client. tearDown() Depopulate created model instances from test database. test create recipient all fields() This is a test for creating a new recipient, with all fields being entered test\_create\_recipient\_minimal()

This is a test for creating a new recipient, with only the minimum fields being entered

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