CANANOLAB 1.5.5

Local Installation Guide

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National Cancer Institute®

Center for Biomedical Informatics and Information Technology

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Table of Contents

Introduction to caNanoLab

Welcome to the cancer Nanotechnology Laboratory (caNanoLab) 1.5.4 Installation Guide. caNanoLab is a data sharing portal designed to facilitate information sharing in the biomedical nanotechnology research community to expedite and validate the use of nanotechnology in biomedicine. caNanoLab allows researchers to share information on nanomaterials including the composition of the nanomaterial, the functions (e.g. therapeutic, targeting, diagnostic imaging) of the particle, the characterizations of the nanomaterial from physico-chemical (e.g. size, molecular weight, surface) and in vitro (e.g. cytotoxicity, blood contact) assays, and the protocols of these characterization.

As of release 1.1, the caNanoLab domain model has been caGrid enabled. In other words, a caNanoLab grid data service can be deployed and registered with caGrid production index server, allowing sharing of public nanomaterial information across the caGrid. In release 1.5, the caNanoLab grid service has been updated to use caGrid 1.3. For more information, see https://cabig.nci.nih.gov/workspaces/Architecture/caGrid.

Targeted Developer

The caNanoLab application development is best suited for an experienced Java developer who has some familiarity with the following J2EE and related technologies:

Important Background Knowledge

- **Unix/Linux environment, Windows XP environment or Mac OS environment (Configuring environment variables; Installing Ant, JDK, Apache Tomcat and JBoss servers)**
- **Ant build scripts**
- **J2EE web application development using the Struts framework, Servlet/JSP's, JavaScript**
- **J2EE middle-ware technologies such as n-tier service-oriented architecture and software design patterns**
- **Hibernate Java persistence framwork**
- **caGrid 1.3 infrastructure (for understanding how a caNanoLab grid data service functions)**

General System Requirements

The following open source technologies power a caNanoLab release 1.5.4 web application:

Open Source Technologies

- Java Software Development Kit (JDK) version 6.0 http://www.oracle.com/technetwork/java/javase/downloads/jdk6-downloads-1637591.html
- JBoss version 5.1.0 http://sourceforge.net/projects/jboss/files/JBoss/JBoss-5.1.0.GA/
- Jakarta Ant version 1.7.x http://archive.apache.org/dist/ant/binaries/
- MySQL version 5.1.x http://dev.mysql.com/downloads/mysql/5.1.html

NOTE

In release 1.5.4, we have upgraded the technology stack for the web application, but the technology stack for the caNanoLab grid service has not been upgraded due to the requirements of caGrid 1.3. If you'd like to install caNanoLab grid service, please refer to the caNanoLab Release 1.5.3 Installation Guide for the required technology stack for installing the caNanoLab grid service.

The caNanoLab web application has been tested within NCICBIIT against JBoss servers (version 5.1.0) hosted on Windows XP and RedHat Linux systems, and against MySQL 5.1.x databases hosted on RedHat Linux systems and Windows XP systems. Prior to release 1.2.1, the caNanoLab web application had been tested against Oracle 9i databases hosted on Sun Solaris systems, and Oracle 10g XE database hosted on Windows XP.

Download each of the tools listed in the bulleted list above and follow the installation instructions provided with each respective product for your environment. Assistance from a MySQL database administrator is expected to properly configure the MySQL database. For MySQL database configuration and maintenance, it is also helpful to download the MySQL workbench (suite of GUI tools) at http://www.mysql.com/downloads/workbench/.

Grid Service Setting up a caNanoLab grid service is optional. It is recommended that you install the grid service only after you successfully install the web application and become familiar with submitting and searching data through the web application.

Grid Service Downloads Since release 1.5.2, there are no separate technology downloads required for installing the caNanoLab grid service, and most can obtained automatically during building of the grid service through Ant.

Obtaining the caNanoLab Source

Source Code The caNanoLab source codes and build scripts for caNanoLab web application and database are distributed as a zip file named `caNanoLab_1.5.4.zip` at https://ncisvn.nci.nih.gov/svn/cananolab/dist/caNanoLab_1.5.4.zip.

Ant Build Properties

Assumptions and Requirements	The caNanoLab source distribution `caNanoLab_1.5.4.zip` has been downloaded. Ant has been installed. In caNanoLab release 1.5.4, the Ant build script automatically installs the web application, the database and the grid service.

Setting Properties

Follow these steps to set the build and deploy properties required for building and deploying the caNanoLab system.

Step	Action

1.
1
	Extract the `caNanoLab_1.5.4.zip` to a location on your local system, for example, `C:\caNanoLab_1.5.4`. This location is referred as `<CANANOLAB_SOURCE>` throughout the document. Verify that the following five folders exist in the directory `<CANANOLAB_SOURCE>`:
	`build`
	`cananolab-db`
	`cananolab-grid`
	`cananolab-webapp`
	`common`

2	Edit the Ant properties file `build.properties` at `<CANANOLAB_SOURCE>/build` by specifying values for the following properties: 1) `file.repository.dir`: a directory on the system that hosts the JBoss application server for storing uploaded files, for example, `C:/apps/caNanoLab` **Note**: This directory should be writable by the user that starts the JBoss server, and this directory should be created prior to starting the application. Either double back slashes \\ or a single forward slash / should be used as the file separator if working on Windows platform. 2) `admin.email`: the email address that receives requests for new user accounts, for example, NCICBIIT application support email for the NCICBIIT installation 3) `ldap.authentication.enabled`: a Boolean flag for whether or not using LDAP for user authentication in caNanoLab, for example, `true` **Note**: Please note that default value is `true`. If you are not using LDAP for user authentication, please set this value to `false` and leave properties 4) through 9) blank. 4) `ldap.host.url`: the URL of the LDAP server used for user authentication 5) `ldap.searchable.base`: the location in the directory from which the LDAP search begins 6) `ldap.userId.label`: the uid label for LDAP, for example, `cn`

Step	Action
	7) `superadmin.login.name`: the LDAP login name for the user account who is the super admin of the UPT tool. See page 14 for details on setting up UPT
	8) `superadmin.first.name`: the LDAP first name for the user account who is the super admin of the UPT tool
	9) `superadmin.last.name`: the LDAP last name for the user account who is the super admin of the UPT tool
	10) `database.server`: the name of the server hosting the database, for example, `localhost`
	11) `database.port`: the database port number, for example, `3306`
	12) `database.user`: the database user name used in the caNanoLab application, for example, `cananolab_app`
	13) `database.password`: the password for the database user specified above, for example, `go!234`
	14) `database.system.user`: the system database user name that has privileges to create a database, create tables, grant user accesses to a database, for example, `root`
	15) `database.system.password`: the password for the system database user specified above, for example, `rootpass`
	16) `jboss.server.dir`: the JBoss server directory, for example, `C:/apps/jboss-5.1.0.GA/server/default`
	Note: The following properties 17) through 34) are only required if you setting up a grid service. These properties contain metadata about the grid service that are required for the grid index server to visually map the location of a grid service in the caGrid portal, and are useful during grid service auto-discovery. If you are not setting up a caNanoLab grid service, you may leave these properties blank.
	17) `application.base.path.linux`: a directory on the Linux system that stores the downloaded external software, such as the Globus WS Core binary files, for example, `${user.home}/apps` **Note**: This property is currently optional for building the web application and the database, and is only required for building the grid service on a Linux system.
	18) `application.base.path.windows`: a directory on the Windows system that stores the downloaded external software, such as the Globus WS Core binary files, for example, `C:/apps`
	19) `grid.indexserver`: the grid index server from which the caNanoLab grid data services can be automatically discovered, for example, `http://cagrid-index.nci.nih.gov:8080/wsrf/services/DefaultIndexService`, NCICBIIT's production caGrid index server
	20) `grid.service.hostname`: virtual host name for the JBoss server hosting the grid service, for example, `cananolab.nci.gov`
	21) `grid.service.port`: port number configured for the JBoss server hosting the caNanoLab grid service, for example, `80`
	22) `grid.service.protocol`: protocol configured for the JBoss server hosting the caNanoLab grid service, for example, `http`
	23) `application.owner`: owner of the caNanoLab grid service, for example, `NCICBIIT`
	24) `country`: the country in which the caNanoLab grid service is running, for

Step	Action
	example, `US`
	25) `city:` the city at which the caNanoLab grid service is running, for example, `Rockville`
	26) `zipcode:` the zip code at which the caNanoLab grid service is running, for example, `20852`
	27) `state:` the state at which the caNanoLab grid service is running, for example, `MD`
	28) `street1:` the first part of the street at which the caNanoLab grid service is running, for example, `2115 East Jefferson Street`
	29) `street2:` the second part of the street at which the caNanoLab grid service is running
	30) `affiliation:` the affiliation of the person who is responsible for maintaining the caNanoLab grid service, for example, `NCICBIIT`.
	31) `email:` the email of the person who is responsible for maintaining the caNanoLab grid service, for example, `NCICBIIT@pop.nih.gov`
	32) `phone:` the phone number of the person who is responsible for maintaining the caNanoLab grid service
	33) `first.name:` the first name of the person who is responsible for maintaining the caNanoLab grid service
	34) `last.name:` the last name of the person who is responsible for maintaining the caNanoLab grid service.

Database Technology

Assumptions and Requirements	The Ant build properties have been set as described on pages 3 through 5. A MySQL database has been set up on a system (local or remote) with a system (or root) account. The system account should match properties 9) and properties 10) in the step 2 of the previous section.
For a Previous Installation	If you have installed caNanoLab prior to release 1.5.4 against an MySQL database, or release 1.2 or release 1.1.1 or release 1.1 against an Oracle database, and have associated production data in these schemas and you would like to continue to use the same data for caNanoLab release 1.5.4 in MySQL, review the following database initialization steps, then go directly to *Data Migration* on page *7.* If you have a previously installed caNanoLab application running on a JBoss server, stop the server before running the database scripts.
For a New Installation	If you are installing the caNanoLab application for the first time or want to install a new schema for release 1.5.4, follow the steps below to set up the required MySQL schema objects and the seed data for release 1.5.4.

Initializing the MySQL Database

Follow these steps to initialize your MySQL database system**:**

Step	Action

1	Execute the Ant build script `build.xml` located at `<CANANOLAB_SOURCE>/build` with the target `install:new:cananolab-db`.
	
	Example: Issue the following commands to execute the Ant script:
	
	`C:\>cd C:\caNanoLab_1.5.4\build`
	`C:\caNanoLab_1.5.4\build>ant install:new:cananolab-db`
	
	Successful execution of the Ant script creates the database schema and seed data required the caNanoLab 1.5.4 release.

2	If you are NOT using LDAP for user authentication, you can skip this step. If you are using LDAP for authentication, execute the Ant build script `build.xml` located at `<CANANOLAB_SOURCE>/build` with the target `update:cananolab-db:ldap:upt:superadmin`
	
	Example: Issue the following commands to execute the Ant script:
	
	`C:\>cd C:\caNanoLab_1.5.4\build`
	`C:\caNanoLab_1.5.3\build>ant update:cananolab-`

	db:ldap:upt:superadmin
	Successful execution of the Ant script updates the default UPT super admin with the user name entered in the build properties file on page 4.

Verification

Once the MySQL database has been created, either through new setup or through data migration (described in the next section), verify that the following numbers of database objects are created:
Tables 72

Example: Issue the following query at the MySQL prompt, logging in as `root`:

```
mysql> select count(*) from information_schema.tables where
table_schema='canano' and table_type='BASE TABLE';
```

Data Migration

NOTE:	
	If you are installing caNanoLab 1.5.4 for the first time or installing a new caNanoLab release 1.5.4 schema, you can skip this section.

This installation guide only discusses the steps for migrating from release 1.5.2 or 1.5.3 in MySQL to release 1.5.4 in MySQL. If you have previously installed caNanoLab in MySQL prior to release 1.5.1, you'd have to migrate to release 1.5.1 first, one release at a time. Please see the install instructions for each release at http://gforge.nci.nih.gov/frs/?group_id=69 for details.

Follow these steps to complete the required data migration from release 1.5.2 or release 1.5.3 in MySQL to release 1.5.4 in MySQL:

Step	Action

1	Execute the Ant build script `build.xml` located at `<CANANOLAB_SOURCE>/build` with the target `update:cananolab-db`.
	
	Example: Issue the following commands to execute the Ant script:
	
	`C:\>cd C:\caNanoLab_1.5.4\build`
	`C:\caNanoLab_1.5.4\build>ant update:cananolab-db`
	
	Successful execution of the Ant script updates the database schema and seed data required the caNanoLab 1.5.4 release.

Step	Action

2	If you are NOT using LDAP for user authentication, you can skip this step. If you are using LDAP for authentication, execute the Ant build script `build.xml` located at `<CANANOLAB_SOURCE>/build` with the target `update:cananolab-db:ldap:upt:superadmin`
	
	Example: Issue the following commands to execute the Ant script:
	
	`C:\>cd C:\caNanoLab_1.5.4\build`
	`C:\caNanoLab_1.5.4\build>ant update:cananolab-`
	`db:ldap:upt:superadmin`
	
	Successful execution of the Ant script updates the default UPT super admin with the user name entered in the build properties file on page 4.

3	If you are NOT using LDAP for user authentication, you can skip this step. If you are using LDAP for authentication, and you already have user accounts in the system and you have data created by these users whose login names are not their LDAP login IDs, you'd need to do the following data update:
	
	1) Update the `login_name` column of the `csm_user` table with the LDAP login name for each user in the table:
	
	    Example: Issue the following query at the MySQL prompt for each user, logging in as *root*:
	
	    `mysql> update csm_user set login_name='@ldap_login@'`
	    `where login_name='@old_login@';`
	
	    Where the token `@ldap_login@` should be replaced by the real LDAP login name that corresponds to the old login name. The token `@old_login@` should be replaced by the old login name.
	
	2) Update the `created_by` column of tables containing the column with the LDAP login name:
	
	    Example: Issue the following query at the MySQL prompt for each table containing the `created_by` column, logging in as *root*:
	
	    `mysql> update sample set created_by='@ldap_login@' where`
	    `created_by ='@old_login@';`
	
	    Where the token `@ldap_login@` should be replaced by the real LDAP login name that corresponds to the old login name. The token `@old_login@` should be replaced by the old login name.
	
	    Note: if the `created_by` field contains the word "`COPY`" in it, update it with have a prefix "`@LDAP_login@:`", `where` the token `@ldap_login@` should be replaced by the real LDAP login name that corresponds to the old login name who created the data. If you don't know the original login who created the data, use the LDAP login of a curator. If you need assistance on completing the data updates for this step, please contact the caNanoLab technical team.

After data migration, refer to the Verification section to verify that the migration has been successful.

caNanoLab Web Application

Assumptions and Requirements	Ant has been installed. Ant build properties have been set up, as described on pages 3 through 5. The database has been installed and verified, as described on pages 6 through 9. The JBoss application server has been installed on a system (local or remote) and can be started at a designated port. JBoss install directory is referred as `<JBOSS_HOME>` in the document. The JBoss application server host URL is referred as `<APP_SERVER_URL>`, for example, cananolab-dev.nci.nih.gov:19080.
	It is assumed that the default configuration is used for deploying caNanoLab web archive files. For example, in JBoss 5.1.0, the default configuration is located at the directory `<JBOSS_HOME>/server/default`. The caNanoLab web archive file shall be deployed at the directory `<JBOSS_HOME>server/default/deploy`.
	It is possible to configure Apache server to interface with the JBoss server and set up a virtual host for the caNanoLab application, if you need assistance, please contact NCICBIIT Application Support (info provided at the end).

Installation and Deployment

Follow these steps to install and deploy caNanoLab:

Step	Action
1	Set up an environment variable `JBOSS_HOME` to point to the JBoss installation directory. **Note:** Either double back slashes \\ or a single forward slash / should be used as the file separator if working on Windows platform, for example, `JBOSS_HOME=C:/jboss-5.1.0.GA` (`C:\jboss-5.1.0.GA` would fail).

2	Execute the Ant build script `build.xml` located at `<CANANOLAB_SOURCE>/build` with the target `deploy:cananolab-webpp.`
	
	Example: Issue the following commands to execute the Ant script:
	
	`C:\>cd C:\caNanoLab_1.5.4\build`
	`C:\caNanoLab_1.5.4\build>ant deploy:cananolab-webapp`
	
	Successful execution of the Ant script generates the following artifacts that include two deployable web archive war files, configuration files and libraries for running the web application in the JBoss environment, and also places these artifacts in the appropriate directories under `<JBOSS_HOME>`:

Step	Action

	`<CANANOLAB_SOURCE>/target/dist/exploded/cananolab-webapp/caNanoLab.war`
	
	`<CANANOLAB_SOURCE>/target/dist/exploded/common/ApplicationSecurityConfig.xml`
	
	`<CANANOLAB_SOURCE>/target/dist/exploded/common/csmupt.csm.new.hibernate.cfg.xml`
	
	`<CANANOLAB_SOURCE>/target/dist/exploded/common/csmupt423.csm.new.hibernate.cfg.xml`
	
	`<CANANOLAB_SOURCE>/target/dist/exploded/common/login-config.xml`
	
	`<CANANOLAB_SOURCE>/target/dist/exploaded/common/mysql-connector-java-5.0.7.jar`
	
	`<CANANOLAB_SOURCE>/target/dist/exploded/common/upt-ds.xml`
	
	`<CANANOLAB_SOURCE>/target/dist/exploded/common/properties-service.xml`
	
	`<CANANOLAB_SOURCE>/target/dist/exploded/common/upt-ds.xml`
	
	`<CANANOLAB_SOURCE>/target/dist/exploded/common/uptEAR.ear`

3	We recommend increasing the JBoss JVM heap size to 1G bytes and permanent generation (permgen) memory space to 256M bytes by updating the file `<JBOSS_HOME>/bin/run.conf` with the following `JAVA_OPTS`:
	
	`JAVA_OPTS="-Xms512m -Xmx1024m -XX:PermSize=128m -XX:MaxPermSize=256m`
	` -Dsun.rmi.dgc.client.gcInterval=3600000 -Dsun.rmi.dgc.server.gcInterval=3600000"`
	
	This configuration file is read when JBoss server starts.

4	When deploying the caNanolab application and the grid service in a production environment, we also recommend updating the default logging behavior of the JBoss server by turning off the unnecessary loggings thus reducing file system requirements for server log files.
	
	Please locate the file `<JBOSS_HOME>/server/default/conf/log4j.xml` and add to the beginning of the section `Limit categories` the following text:
	`  <!-- ================ -->`
	`   <!-- Limit categories -->`
	`   <!-- ================ -->`
	
	`    <!-- edited for caNanoLab -->`
	`    <category name="org.hibernate">`

Step	Action
|  | ```xml
      <priority value="WARN"/>
   </category>
   <category name="org.springframework">
      <priority value="WARN"/>
   </category>
   <category name="org.globus">
      <priority value="WARN"/>
   </category>
   <category name="gov.nih.nci">
      <priority value="ERROR"/>
   </category>
   <category name="org.displaytag">
      <priority value="ERROR"/>
   </category>
   <category name="org.directwebremoting">
      <priority value="ERROR"/>
   </category>
   <category name="net.sf.ehcache">
      <priority value="INFO"/>
   </category>
   <category name="com.mchange.v2">
      <priority value="INFO"/>
   </category>
   <category name="org.jboss">
      <priority value="INFO"/>
   </category>
   <category name="CSM">
      <priority value="ERROR"/>
   </category>
   <category name="Authorization">
      <priority value="ERROR"/>
   </category>
    <!—end of edit for caNanoLab -->
``` |

Verification

Once the deployment artifacts have been deployed and the JBoss application server is correctly configured, you can now start the JBoss application server, which in turn starts the caNanoLab application.

Open the URL http://<APP_SERVER_URL>/caNanoLab/ (for example, http://localhost:8080/caNanoLab). You should see a Welcome/Login page.

User Provisioning Tool (UPT)

	Before a user can log in to the caNanoLab application to submit and search data, you must first create his/her user account through the UPT web interface. The caNanoLab application makes use of the NCICBIIT's User Provisioning Tool (UPT), a separate web application, for user account management. The concepts of users, groups, roles, protection groups are defined according the CSM/UPT principles. See the CSM documentation at http://gforge.nci.nih.gov/frs/?group_id=12 for details on these concepts and the use of the UPT tool.
Creating User Accounts	

Since release 1.5.2, as a part of the database seed data, two default user groups have been created: `Public` and `Curator`. The group `Public` has been assigned role `R` (read-only) public protocols, samples and publications. The group `Curator` has been assigned role `CURD` (create, update, read and delete) to all protocols, samples and publications in the system. When a user first logs into caNanoLab, he/she will be automatically added to the `Public` group so he/she can see all public data. The user would need to be added to the `Curator` group in the UPT tool in order to have Curator access.

NOTE:	Since release 1.5.2, a user must be assigned as a caNanoLab administrator to see the `ADMINISTRATION` menu item in the application to log into the UPT tool or do update site preferences such as site logo. A user must be assigned as a caNanoLab administrator and assigned to the Curator group to be able to execute the transfer ownership function.

UPT Example   The following steps illustrate an example use of the UPT tool to create a new user, to assign the user to be a caNanoLab administrator, and to assign the user to the `Curator` group.

Step	Action
1	Launch the UPT tool at http://<APP_SERVER_URL>/uptlogin and login as the super admin. If you are NOT using LDAP for user authentication, the default user account/password for super admin is *superadmin/superadmin*. Use **csmupt** as the application name when prompted at the UPT log in. If you are using LDAP for user authentication, please use the LDAP login name and password of the user who has been assigned as the super admin as specified in the Ant build properties file on page 5. **Note:** The user *superadmin* with initial password *superadmin* was created as a part of the database setup. Only *superadmin* can assign users to be caNanoLab administrators.

2	If you are using LDAP for user authentication, you can skip this step. If you are not using LDAP for authentication, you can follow this step to reset the password for ***superadmin***: Select **User > Select an Existing User**. Click on **Search** and select ***superadmin*** and click on **View Details**. Update the **User Password** field and **Confirm Password** field and click on **Update** to commit the change.
3	Logged in as the super admin, follow these steps to create a new user and assign it to be a caNanoLab administrator: Select **User > Create a New User**. Create a new user account named **admin** with an initial password. Select **Application > Select an Existing Application**; click **Search**. Select **caNanoLab** from the application list. Click **View Details**, then **Associated Admins**. Assign this user to be an administrator for the caNanoLab application. Click **Update Association** to commit the change. **Note**: if you using LDAP for user authentication, any user login names created in the UPT tool should be a valid LDAP log in name.

4	Before the newly created user can log into the UPT application, logged in as the super admin, follow these steps to update the required database connection information for the **csmupt** and **caNanoLab** applications under the **Application** tab:
	
	Select **Application > Select an Existing Application**; click **Search**.
	Select **csmupt** from the application list.
	Click **View Details**, then update the following fields:
	
	        Application Database URL,
	        for example, `jdbc://mysql://localhost:3306/canano`
	        Application Database User Name
	        for example, `cananolab_app`
	        Application Database Password
	        for example, `go!234`
	        Application Database Confirm Password
	        for example, `go!234`
	        Application Database Dialect
	        `org.hibernate.dialect.MySQLDialect`
	        Application Database Driver
	        `com.mysql.jdbc.Driver`
	
	Note: Please refer to page 5 for appropriate values for these fields. Values for **Application Database Dialect** and **Application Database Driver** should be exactly entered as shown above.
	
	Repeat the steps to update the database connection information for the **caNanoLab** application.

5	Log out of the UPT tool and log back in as **admin**. Use **caNanoLab** as the application name when prompted at the UPT log in.
1. 6	Select **User > Select an Existing User**, and click **Search**. Select **admin** from the User list. Click **View Details**, then **Associated Groups**. Select **Curator** from the pre-defined group list and assign it to the user. Click **Update Associations** to commit the change.

Follow similar steps to create other application user accounts as appropriate.

NOTES:	Since release 1.5.2, if you are not using LDAP for user authentication, **superadmin** or caNanoLab administrators maintains the passwords for user accounts. The UPT tool doesn't allow users to manage their own passwords. Publicly available data can be browsed through **Browse caNanoLab** links on the home page without logins. At each new data submission, the user who creates the data and the `Curator` group are automatically assigned role `CURD` to the newly created data.

For more information about how to use the UPT tool for managing user accounts, contact NCICBIIT Application Support at NCICBIIT@pop.nci.nih.gov and request that the caNanoLab technical team give you a demonstration of the UPT tool in the context of the caNanoLab application.

caNanoLab Grid Data Service

Assumptions and Requirements
As noted earlier, please refer to caNanoLab Release 1.5.3 Installation Guide for the technology stack requirements and how to install the caNanoLab grid service.

Contacting Application **Support**

NCICBIIT Application Support	http://NCICBIIT.nci.nih.gov/NCICBIIT/support NCICBIIT@pop.nci.nih.gov Telephone: 301-451-4384 Toll free: 888-478-4423