



RC101

Introduction to REDCap

Agenda

- What and Why REDCap?
- Quick tour around REDCap
- Creating a data instrument
- REDCap surveys
- Exporting data
- Security
- Other capabilities
- Training & Docs

What and Why REDCap?

What is REDCap?

- REDCap == **R**esearch **E**lectronic **D**ata **C**apture
- REDCap is an Electronic Data Capture (EDC) system
- EDC systems are used to capture data onto an electronic system (i.e., a database)
 - EDCs are generally used by study staff to enter data from paper forms or while interviewing a participant or perhaps abstracting their chart
 - Survey systems are similar to EDCs but are primarily intended to directly survey a participant
 - REDCap is an EDC that also supports surveys

Where did REDCap come from?

- REDCap was created and is actively maintained by Vanderbilt University for the use of universities and non-profit institutions
- Fred Hutch is a member of the REDCap Consortium
- REDCap is for non-profit data collection only
 - It may not be used by for-profit entities or for for-profit work

And where is REDCap going?

- As of Oct 2019, REDCap is installed on 3,719 partner institutions in 131 countries and is serving 772,000 projects with 1,000,000+ users
- REDCap has been cited in 7,136 journal articles
- REDCap has a vibrant & active community and is constantly being upgraded and improved

Quick Tour around REDCap

My Projects Page

Fred Hutch REDCap News (No need to login to access any of these links!)

- REDCap is now at version 8.5.1. View [REDCap versions and the features added to each release](#).
- CDS provides [extensive \(and free\) REDCap Training](#), both in-person and video-based training.
- MyCap may just revolutionize the collection of data from participants on mobile devices. Watch the [MyCap video](#).
- If you want to create a new REDCap project, please complete this short [New Project Request survey](#).
- [Additional information](#) on the Fred Hutch REDCap instance, including security and IRB considerations.

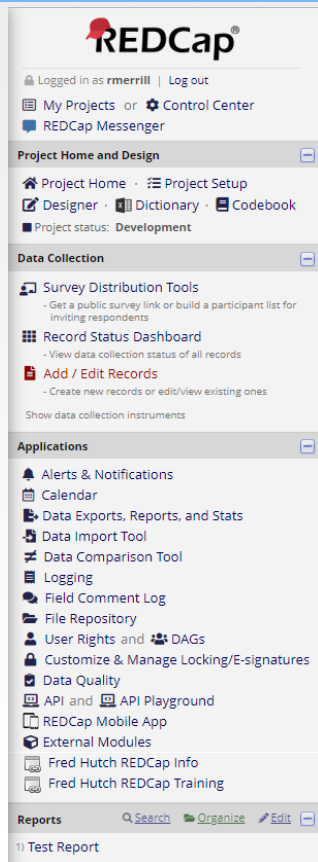
Listed below are the REDCap projects to which you currently have access. Click the project title to open the project. [Read more](#)

ATTENTION REQUESTED: You have not accessed the User Access Dashboard yet. It is recommended that you access the User Access Dashboard at least once each calendar month to review which users still have access to your projects.

Go to [User Access Dashboard](#)

Project Title	Records	Fields	Instrument	Type	Status
Paul Demo Project July 2018	6	43	7 forms		
Paul Brand New Project	0	2	1 form		

Project Navbar



The screenshot shows the REDCap Project Navbar with the following sections:

- Project Home and Design**
 - Project Home
 - Project Setup
 - Designer
 - Dictionary
 - Codebook
 - Project status: Development
- Data Collection**
 - Survey Distribution Tools
 - Get a public survey link or build a participant list for inviting respondents
 - Record Status Dashboard
 - View data collection status of all records
 - Add / Edit Records
 - Create new records or edit/view existing ones
 - Show data collection instruments
- Applications**
 - Alerts & Notifications
 - Calendar
 - Data Exports, Reports, and Stats
 - Data Import Tool
 - Data Comparison Tool
 - Logging
 - Field Comment Log
 - File Repository
 - User Rights and DAGs
 - Customize & Manage Locking/E-signatures
 - Data Quality
 - API and API Playground
 - REDCap Mobile App
 - External Modules
 - Fred Hutch REDCap Info
 - Fred Hutch REDCap Training
- Reports**
 - Search
 - Organize
 - Edit

Access to most parts of REDCap including other pages (My Projects, Project Home, etc.), Data collection, Other stuff (Applications), Reports, Help


Project Setup



Paul Brand New Project


[Project Home](#) [Project Setup](#) [Other Functionality](#) [Project Revision History](#)

Project status:  Development Completed steps 0 of 7


Main project settings

 Not started

 Use surveys in this project? [?](#)  [VIDEO: How to create and manage a survey](#)

 Use longitudinal data collection with defined events? [?](#)

Design your data collection instruments


 Not started


Go to or Explore the


Have you checked the [Check For Identifiers](#) page to ensure all identifier fields have been tagged?


Learn how to use [Smart Variables](#) [Piping](#) [Action Tags](#)


Enable optional modules and customizations


 Optional

 Repeatable instruments [?](#)

 Auto-numbering for records [?](#)

 Scheduling module (longitudinal only) [?](#)

 Randomization module [?](#)

 Designate an email field for sending survey invitations [?](#)

Access to online designer, data dictionary, main project settings, optional modules and customizations, user rights, etc.

Record Status Dashboard

Record Status Dashboard (all records)

Displayed below is a table listing all existing records/responses and their status for every data collection instrument (and if longitudinal, for every event). You may click any of the colored buttons in the table to open a new tab/window in your browser to view that record on that particular data collection instrument. Please note that if your form-level user privileges are restricted for certain data collection instruments, you will only be able to view those instruments, and if you belong to a Data Access Group, you will only be able to view records that belong to your group.

Legend for status icons:

- Incomplete Incomplete (no data saved) ?
- Unverified Partial Survey Response
- Complete Completed Survey Response

Dashboard displayed: [Default dashboard] ▼

[Create custom dashboard](#)

Displaying record Page 1 of 1: "1" through "18" ▼ of 9 records

ALL (9) ▼ records per page

[+ Add new record](#)

Displaying: [Instrument status only](#) | [Lock status only](#) | [All status types](#)

Subject ID	Enrollment	Baseline Interview	Month 3 Interview	Month 6 Interview	Month 12 Interview	Psychosocial Survey	Exit
1	●	●	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	●	●
2	●	●	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	●	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	●	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	●
14	●	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Overview of all your records; access to custom dashboards.

Add/Edit Records

Paul Demo Project July 2018

Add / Edit Records

You may view an existing record/response by selecting it from the drop-down lists below. To create a new record/response, click the button below.

Total records: 6

Choose an existing Subject ID

-- select record -- ▾

Add new record

Data Search

Choose a field to search

(excludes multiple choice fields)

All fields ▾

Search query

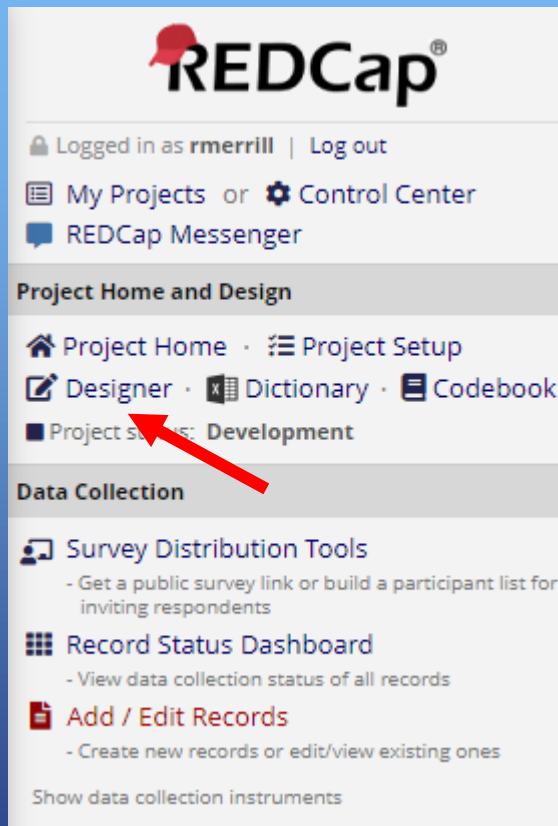
Begin typing to search the project data, then click an item in the list to navigate to that record.

Allows you to...

1. Select a record by subject id.
2. Add a new record.
3. Search for a record by any field in project.

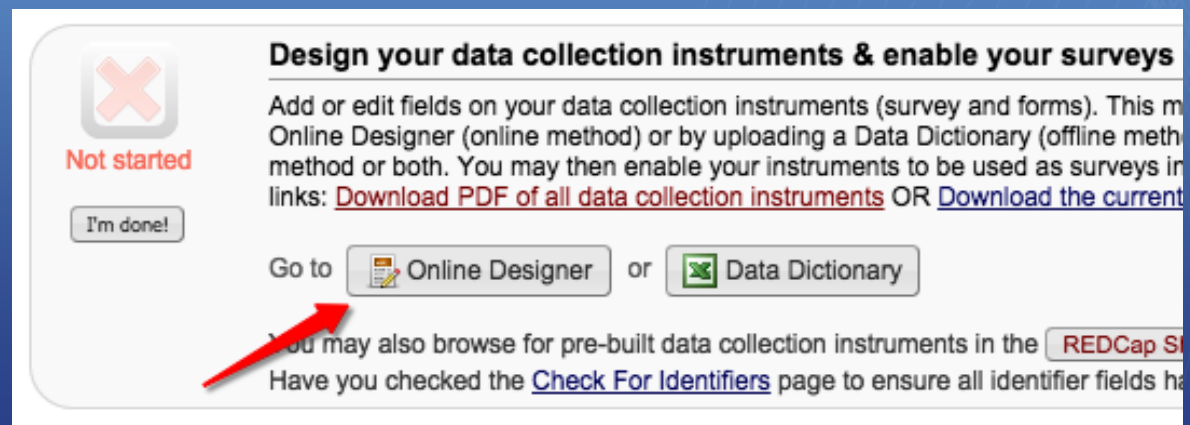
Creating a Data Instrument

Creating a data form using the designer



The screenshot shows the REDCap interface. At the top, it says 'Logged in as rmerrill | Log out'. Below that are links for 'My Projects or Control Center' and 'REDCap Messenger'. The 'Project Home and Design' section contains links for 'Project Home', 'Project Setup', 'Designer', 'Dictionary', and 'Codebook'. A red arrow points to the 'Designer' link. Below this is the 'Data Collection' section with links for 'Survey Distribution Tools', 'Record Status Dashboard', and 'Add / Edit Records'.

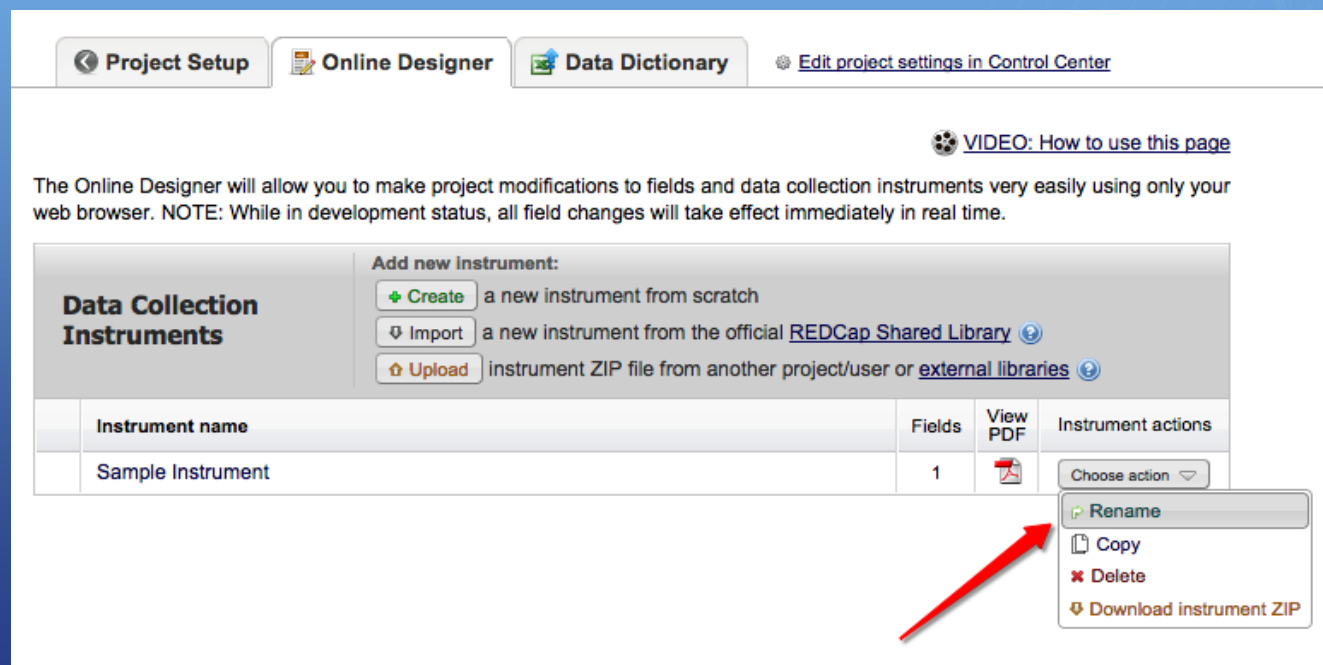
- Starting the designer
 - Click **Designer** link under Project Home and Design on left-hand navigation bar
 - Click **Online Designer** button under Design your data collection instruments & enable your surveys under Project Setup tab



The screenshot shows a notification box with a red 'X' icon and the text 'Not started'. Below the icon is a button that says 'I'm done!'. The main text reads: 'Design your data collection instruments & enable your surveys. Add or edit fields on your data collection instruments (survey and forms). This may be done using the Online Designer (online method) or by uploading a Data Dictionary (offline method) or both. You may then enable your instruments to be used as surveys in your project. For more information, see the links: [Download PDF of all data collection instruments](#) OR [Download the current data collection instruments](#)'. Below this text are two buttons: 'Go to Online Designer' and 'or Data Dictionary'. A red arrow points to the 'Online Designer' button. At the bottom, there is a link to 'REDCap Survey Instruments' and a note: 'Have you checked the [Check For Identifiers](#) page to ensure all identifier fields have been properly configured?'

Initial Project

- For new projects using the Fred Hutch template, you will start with a single data collection instrument, **Sample Instrument**
- Do **not** delete this instrument; rename it instead



The screenshot shows the REDCap Online Designer interface. At the top, there are navigation tabs: "Project Setup", "Online Designer", "Data Dictionary", and "Edit project settings in Control Center". Below the tabs, there is a video link: "VIDEO: How to use this page". A text block explains that the Online Designer allows for easy modifications to fields and instruments, and that changes take effect immediately. The main content area is titled "Data Collection Instruments" and includes an "Add new Instrument:" section with three options: "Create" (a new instrument from scratch), "Import" (a new instrument from the official REDCap Shared Library), and "Upload" (instrument ZIP file from another project/user or external libraries). Below this is a table with columns for "Instrument name", "Fields", "View PDF", and "Instrument actions". The table contains one row for "Sample Instrument" with 1 field and a PDF icon. A dropdown menu is open for the "Sample Instrument" row, showing options: "Rename", "Copy", "Delete", and "Download instrument ZIP". A red arrow points to the "Rename" option.

Project Setup Online Designer Data Dictionary Edit project settings in Control Center


VIDEO: How to use this page

The Online Designer will allow you to make project modifications to fields and data collection instruments very easily using only your web browser. NOTE: While in development status, all field changes will take effect immediately in real time.

Data Collection Instruments

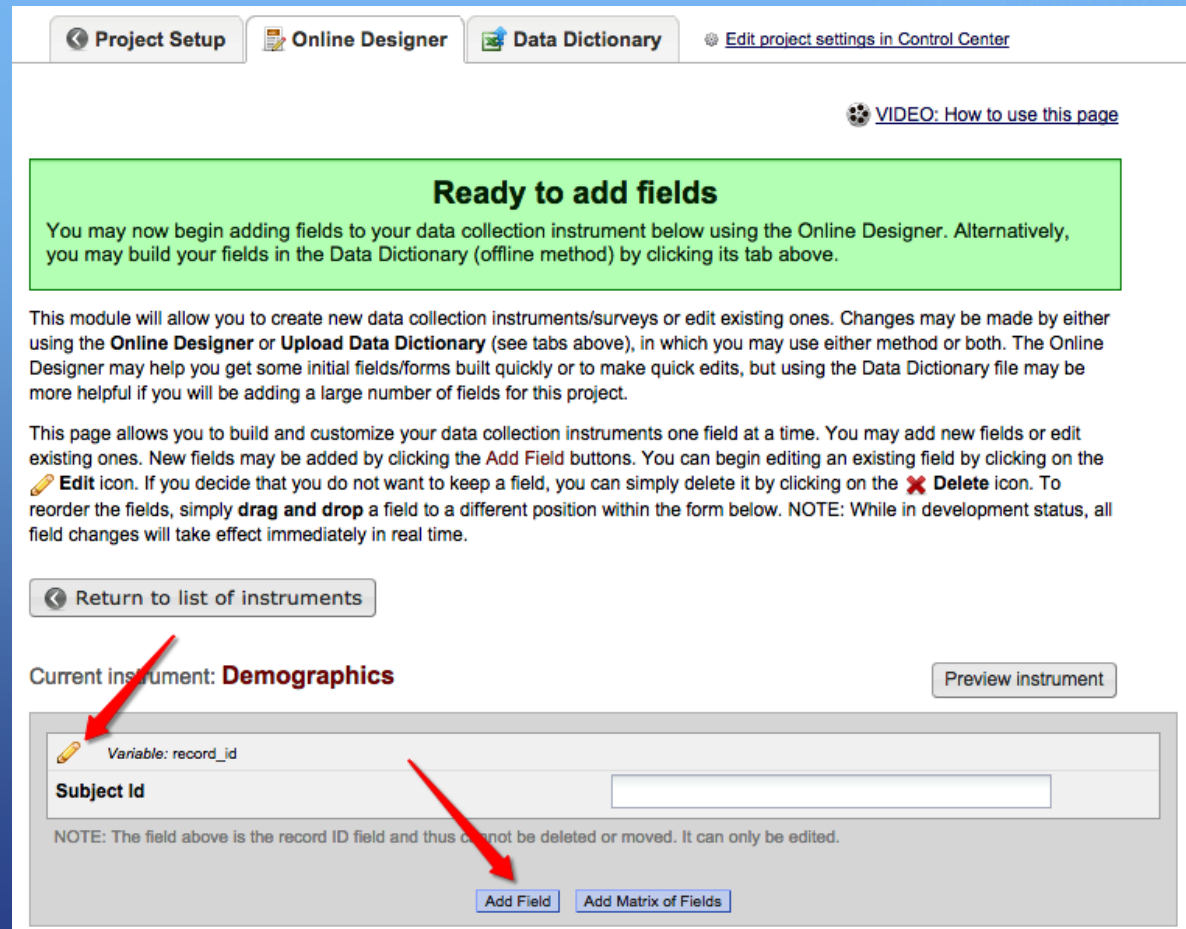
Add new Instrument:

- Create a new instrument from scratch
- Import a new instrument from the official REDCap Shared Library
- Upload instrument ZIP file from another project/user or external libraries

Instrument name	Fields	View PDF	Instrument actions
Sample Instrument	1		Choose action Rename Copy Delete Download instrument ZIP

Your first form

- It will always have the **record_id** (**subject_id**) field
- **Don't** delete this field; it is the primary key of your project.
- You may, however, rename it



The screenshot shows the REDCap Online Designer interface. At the top, there are navigation tabs: "Project Setup", "Online Designer" (which is active), and "Data Dictionary". A link "Edit project settings in Control Center" is also visible. Below the tabs, there is a green box with the heading "Ready to add fields" and the text: "You may now begin adding fields to your data collection instrument below using the Online Designer. Alternatively, you may build your fields in the Data Dictionary (offline method) by clicking its tab above." Below this, there are two paragraphs of text explaining the module's purpose and how to use it. A "Return to list of instruments" button is located below the text. The current instrument is "Demographics", and there is a "Preview instrument" button. The main area shows a field named "Subject Id" with a variable name of "record_id". A red arrow points to the "Subject Id" field, and another red arrow points to the "Add Field" button. Below the field, there is a note: "NOTE: The field above is the record ID field and thus cannot be deleted or moved. It can only be edited." At the bottom, there are two buttons: "Add Field" and "Add Matrix of Fields".

Adding a field

- Clicking the **Add Field** button, brings you to the **Add New Field** dialog
- This dialog will vary depending on the **Field Type** selected

Add Field

Add New Field

You may add a new project field to this data collection instrument by completing the fields below and clicking the Save button at the bottom. When you add a new field, it will be added to the form on this page. For an overview of the different field types available, you may view the [Field Types video \(4 min\)](#).

Field Type: Text Box (Short Text)

Field Label

[How to use Piping](#)

Variable Name (utilized during data export)

ONLY letters, numbers, and underscores

Enable auto naming of variable based upon its Field Label?

Validation? (optional) ---- None ----

— or —

Enable searching within a biomedical ontology ?

-- choose ontology to search --

Required?* No Yes

* Prompt if field is blank

Identifier? No Yes

Does the field contain Identifying information (e.g., name, SSN, address)?

Custom Alignment Right / Vertical (RV)

Align the position of the field on the page

Field Note (optional)

Small reminder text displayed underneath field

Field Annotation

[Learn about Action Tags](#)

Explanatory notes - not displayed on any page ?

Save

Cancel

Field Types

- **Standard fields**

- **Text Box**

- REDCap supports autocomplete based on biomedical ontologies (e.g., ICD-10 codes).

- **Notes Box** – paragraph of text

- **Calculated Field** – numeric calculation

- **Multiple Choice – Drop-down List** (Single Answer)

- **Multiple Choice – Radio buttons** (Single Answer)

- **Checkboxes** (Multiple Answers)

- **Yes – No** – yes/no radio button

- **True – False** – true/false radio button

- **Signature** – draw signature with mouse or finger

- **File Upload** – attach documents to form

- **Slider / Visual Analog Scale** – slider from 1 to 100

- **Descriptive Text** – does not capture data

- **Begin New Section** – also does not capture data

- **Dynamic Query (SQL)** – dropdown hooked up to another project. Requires admin to setup

- **Matrix fields**

- Adds a group of radio button or checkbox fields sharing same set of responses

Other Form Features

- Branching (skip logic)
- Validation of fields
 - Email address, date, number with min, max
- Calculated fields
- Piping of data
 - Customize labels based on data entered
- Action tags
 - Make fields read only, set default value, hide fields, etc.

This topic discussed in much greater detail in RC201 seminar

Other REDCap Features

REDCap Surveys

- A survey is a data instrument that can be completed directly by *participant*
- All data instruments *can be* enabled as surveys
- Surveys can be administered to be anonymous or non-anonymous
- Only one survey can be anonymous per project
 - Additional surveys (since they are tied to a subject) are no longer anonymous
- REDCap can invite participants to take survey via email (or text)
 - Reminders also supported
- You can setup automated invites for follow-up surveys
 - Triggered based on logic on form/survey responses

This topic discussed in much greater detail in RC202 seminar

Reporting & Exporting Data

- REDCap allows you to create reports which can be viewed or be used to export data
- Data can be exported to...
 - CSV/Excel
 - SPSS
 - SAS
 - R
 - STATA

This topic discussed in much greater detail in RC204 seminar

Security

- REDCap allows you to grant security at a very fine grain per user or per roles (groups of users)
- Can also use Data Access Groups (DAGs) to segment data per sites (i.e., Site A can only see Site A data, Site B can only see Site B data, etc.)

This topic discussed in much greater detail in RC204 seminar

Other Capabilities/Features (1 of 2)

- Development and Production modes
 - Ability to draft changes when in production
- Support for instruments that repeat on either a fixed schedule or ad-hoc
- Randomization support
- Built-in audit trail
- Support for field comments
- Data Quality Rules
- Data Import

These topics discussed in much greater detail in other seminars

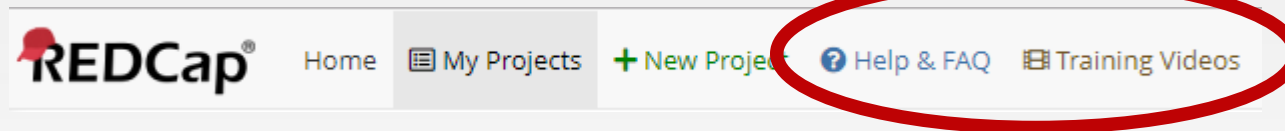
Other Capabilities/Features (2 of 2)

- Support for double-data-entry
- Records can be locked/e-signed
- REDCap supports advanced capabilities via programming hooks...
 - Data entry triggers (run code when a record is saved)
 - API programming (other systems can pull or push data from/to REDCap)
 - Data entry hooks / external modules (customize the data entry experience in REDCap)
- Offline support for mobile devices

These topics discussed in much greater detail in other seminars

Training & Docs

- Right within REDCap...
 - Note: you must close any project and go to the Home or My Projects tab



- CDS provides support in the form...
 - Free training & videos
 - Free office hours twice a month (1st & 3rd Mondays from 2-3pm)
 - Support ticketing system
 - Slack channel for peer support
 - Option to help with setup and programming
 - See Fred Hutch REDCap news at <http://redcap.fredhutch.org> for links to all above services

Summary

- REDCap is a rich research-oriented EDC with support for surveys
- REDCap is a vibrant product with a bright future
- REDCap has support for logging, import, export, longitudinal studies, email/texting, mobile devices, role-base security, ...
- REDCap can be extended via a number of programming extensions
- REDCap has lots of online help, videos

More Information

- Visit... <http://redcap.fredhutch.org>
- For help, submit a help ticket, by emailing...
 - redcaphelp@fredhutch.org



Thank you!

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Collaborative Data Services (CDS)