

# Package ‘RImmPort’

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**Type** Package

**Title** RImmPort: Enabling Ready-for-analysis Immunology Research Data

**Version** 1.36.0

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**URL** <http://bioconductor.org/packages/RImmPort/>

**Description** The RImmPort package simplifies access to ImmPort data for analysis in the R environment. It provides a standards-based interface to the ImmPort study data that is in a proprietary format.

**License** GPL-3

**Imports** plyr, dplyr, DBI, data.table, reshape2, methods, sqldf, tools, utils, RSQLite

**Suggests** knitr

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## Contents

|                                 |   |
|---------------------------------|---|
| Adverse Events Domain . . . . . | 3 |
| AE . . . . .                    | 4 |

|                                                     |    |
|-----------------------------------------------------|----|
| APMH . . . . .                                      | 4  |
| Associated Persons Medical History Domain . . . . . | 5  |
| buildNewSqliteDb . . . . .                          | 5  |
| Cellular Quantification Domain . . . . .            | 6  |
| CM . . . . .                                        | 6  |
| Concomitant Medications Domain . . . . .            | 6  |
| Demographics Domain . . . . .                       | 7  |
| DM . . . . .                                        | 7  |
| DV . . . . .                                        | 7  |
| Events-class . . . . .                              | 8  |
| EX . . . . .                                        | 9  |
| Exposure Domain . . . . .                           | 9  |
| FA . . . . .                                        | 10 |
| Findings About Domain . . . . .                     | 10 |
| Findings-class . . . . .                            | 10 |
| Genetics Findings Domain . . . . .                  | 11 |
| getAssayDataOfStudies . . . . .                     | 12 |
| getDomainCode . . . . .                             | 13 |
| getDomainDataOfStudies . . . . .                    | 13 |
| getListOfAssayTypes . . . . .                       | 14 |
| getListOfDomains . . . . .                          | 14 |
| getListOfStudies . . . . .                          | 15 |
| getStudiesWithSpecificAssayData . . . . .           | 15 |
| getStudiesWithSpecificDomainData . . . . .          | 16 |
| getStudy . . . . .                                  | 17 |
| Interventions-class . . . . .                       | 17 |
| Laboratory Test Results Domain . . . . .            | 18 |
| LB . . . . .                                        | 18 |
| loadSerializedStudyData . . . . .                   | 19 |
| Medical History Domain . . . . .                    | 19 |
| mergeDomainAndSupplemental . . . . .                | 20 |
| MH . . . . .                                        | 20 |
| Nucleic Acid Quantification Domain . . . . .        | 21 |
| PE . . . . .                                        | 21 |
| PF . . . . .                                        | 22 |
| Physical Examination Domain . . . . .               | 22 |
| Protein Quantification Domain . . . . .             | 23 |
| Protocol Deviations Domain . . . . .                | 23 |
| QS . . . . .                                        | 23 |
| Questionnaires Domain . . . . .                     | 24 |
| RImmPort . . . . .                                  | 24 |
| serializeStudyData . . . . .                        | 24 |
| setImmPortDataSource . . . . .                      | 25 |
| Skin Response Domain . . . . .                      | 26 |
| SpecialPurpose-class . . . . .                      | 26 |
| SR . . . . .                                        | 26 |
| Study-class . . . . .                               | 27 |
| SU . . . . .                                        | 28 |

|                                                     |           |
|-----------------------------------------------------|-----------|
| Subject Visits Domain . . . . .                     | 28        |
| Substance Use Domain . . . . .                      | 28        |
| SUPP . . . . .                                      | 29        |
| SUPPDV . . . . .                                    | 29        |
| SUPPFA . . . . .                                    | 30        |
| SUPPLB . . . . .                                    | 30        |
| SUPPMH . . . . .                                    | 31        |
| SUPPPE . . . . .                                    | 32        |
| SUPPPF . . . . .                                    | 32        |
| SUPPVS . . . . .                                    | 33        |
| SUPPZA . . . . .                                    | 34        |
| SUPPZB . . . . .                                    | 34        |
| SUPPZC . . . . .                                    | 35        |
| SUPPZD . . . . .                                    | 36        |
| SV . . . . .                                        | 37        |
| TA . . . . .                                        | 37        |
| TI . . . . .                                        | 38        |
| Titer Assay Results Domain . . . . .                | 38        |
| Trial Arms Domain . . . . .                         | 38        |
| Trial Inclusion Exclusion Criteria Domain . . . . . | 38        |
| Trial Summary Domain . . . . .                      | 39        |
| Trial Visits Domain . . . . .                       | 39        |
| TrialDesign-class . . . . .                         | 39        |
| TS . . . . .                                        | 40        |
| TV . . . . .                                        | 41        |
| Vital Signs Domain . . . . .                        | 41        |
| VS . . . . .                                        | 41        |
| ZA . . . . .                                        | 42        |
| ZB . . . . .                                        | 42        |
| ZC . . . . .                                        | 43        |
| ZD . . . . .                                        | 44        |
| <b>Index</b>                                        | <b>45</b> |

---

Adverse Events Domain *Adverse Events Domain*

---

## Description

The Adverse Events data of an ImmPort study is reformatted to the CDISC SDTM Adverse Events (AE) domain model, and is a list of 2 data frames containing 1) Adverse Events data [AE](#) and 2) any supplemental Adverse Events data [SUPP](#)

AE

*Adverse Events Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>               |
|----------------------|-------------------------------------|
| STUDYID              | Study Identifier                    |
| DOMAIN               | Domain Abbreviation                 |
| USUBJID              | Unique Subject Identifier           |
| AESEQ                | Sequence Number                     |
| AESPID               | Sponsor-Defined Identifier          |
| AETERM               | Reported Term for the Adverse Event |
| AEMODIFY             | Modified Reported Term              |
| AEBODYSYS            | Body System or Organ Class          |
| AELOC                | Location of Event                   |
| AESEV                | Severity/Intensity                  |
| AEACN                | Action Taken with Study Treatment   |
| AEACNOTH             | Other Action Taken                  |
| AEREL                | Causality                           |
| AERELNST             | Relationship to Non-Study Treatment |
| AEOUT                | Outcome of Adverse Event            |
| AESTDY               | Study Day of Start of Adverse Event |
| AEENDY               | Study Day of End of Adverse Event   |

APMH

*Associated Persons Medical History Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>                 |
|----------------------|---------------------------------------|
| STUDYID              | Study Identifier                      |
| DOMAIN               | Domain Abbreviation                   |
| APID                 | Associated Persons Identifier         |
| MHSEQ                | Sequence Number                       |
| RSUBJID              | Related Subject                       |
| SREL                 | Subject Relationship                  |
| MHTERM               | Reported Term for the Medical History |
| MHCAT                | Category for Medical History          |
| MHBODSYS             | Body System or Organ Class            |
| MHDTC                | Date/Time of History Collection       |
| MHDY                 | RStudy Day of History Collection      |

---

|                                                  |
|--------------------------------------------------|
| Associated Persons Medical History Domain        |
| <i>Associated Persons Medical History Domain</i> |

---

**Description**

The Associated Persons Medical History data of an ImmPort study is reformed to the CDISC SDTM AAssociated Persons Medical History (APMH) domain model, and is a list of 2 data frames containing 1) Associated Persons Medical History data [APMH](#) and 2) any supplemental Associated Persons Medical History data [SUPP](#)

---

|                        |                               |
|------------------------|-------------------------------|
| buildNewSqliteDatabase | <i>buildNewSqliteDatabase</i> |
|------------------------|-------------------------------|

---

**Description**

The function buildSqliteDatabase builds a sqlite db of ImmPort study data. It takes in as input the study files in the TSV (Tab) format.

**Usage**

```
buildNewSqliteDatabase(data_dir, db_dir)
```

**Arguments**

|          |                                                         |
|----------|---------------------------------------------------------|
| data_dir | File directory where the study TSV files are stored     |
| db_dir   | File directory where the sqlite database will be stored |

**Value**

The SQLite database name

**Examples**

```
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
# set tab_dir to the folder where the zip files are located
tab_dir <- file.path(studies_dir, "Tab")
# set db_dir to the folder where the database file 'ImmPort.sqlite' should be stored
db_dir <- file.path(studies_dir, "Db")
# build a new ImmPort SQLite database with the data in the downloaded zip files
# dbname <- buildNewSqliteDatabase(tab_dir, db_dir)
```

---

Cellular Quantification Domain

*Cellular Quantification Domain*


---

**Description**

The ImmPort study data generated from assays of types: Flow and ELISPOT are grouped into the Cellular Quantification Domain. The data is reformatted to a custom Cellular Quantification domain model in CDISC SDTM standards, and is a list of 2 data frames containing 1) Cellular Quantification data [ZB](#) and 2) any supplemental Cellular Quantification data [SUPP](#)

---

CM

*Concomitant Medications Domain Variables*


---

**Description**

| Variable Name | Variable Label                         |
|---------------|----------------------------------------|
| STUDYID       | Study Identifier                       |
| DOMAIN        | Domain Abbreviation                    |
| USUBJID       | Unique Subject Identifier              |
| CMSEQ         | Sequence Number                        |
| CMTRT         | Reported Name of Drug, Med, or Therapy |
| CMCAT         | Category for Medication                |
| CMDOSE        | Dose per Administration                |
| CMDOSTXT      | Dose Description                       |
| CMDOSU        | Dose Units                             |
| CMDOSFREQ     | Dosing Frequency per Interval          |
| CMROUTE       | Route of Administration                |
| CMSTDTC       | Start Date/Time of Medication          |
| CMENDTC       | End Date/Time of Medication            |
| CMSTDY        | Study Day of Start of Medication       |
| CMENDY        | Study Day of End of Medication         |

---

Concomitant Medications Domain

*Concomitant Medications Domain*


---

**Description**

The Concomitant Medications data of an ImmPort study is reformatted to the CDISC SDTM Concomitant Medications (CM) domain model, and is a list of 2 data frames containing 1) Concomitant Medications data [CM](#) and 2) any supplemental Concomitant Medications data [SUPP](#)

---

|                     |                            |
|---------------------|----------------------------|
| Demographics Domain | <i>Demographics Domain</i> |
|---------------------|----------------------------|

---

**Description**

The Demographics data of an ImmPort study is reformatted to the CDISC SDTM Demographics (DM) domain model, and is a list of 2 data frames containing 1) Demographics data [DM](#) and 2) any supplemental Demographics data [SUPP](#)

---

|    |                                      |
|----|--------------------------------------|
| DM | <i>Demographics Domain Variables</i> |
|----|--------------------------------------|

---

**Description**

| Variable Name | Variable Label                                     |
|---------------|----------------------------------------------------|
| STUDYID       | Study Identifier                                   |
| DOMAIN        | Domain Abbreviation                                |
| USUBJID       | Unique Subject Identifier                          |
| AGE           | Age                                                |
| AGEU          | Age Units                                          |
| SEX           | Sex                                                |
| RACE          | Race (only for human data)                         |
| ETHNIC        | Ethnicity (only for human data)                    |
| SPECIES       | Species (only for non-human data)                  |
| STRAIN        | Strain/Substrain (only for non-human data)         |
| SBSTRAIN      | Strain/Substrain Details (only for non-human data) |
| ARMCD         | Planned Arm Code                                   |
| ARM           | Description of Planned Arm                         |

---

|    |                                             |
|----|---------------------------------------------|
| DV | <i>Protocol Deviations Domain Variables</i> |
|----|---------------------------------------------|

---

Description

| Variable Name | Variable Label            |
|---------------|---------------------------|
| STUDYID       | Study Identifier          |
| DOMAIN        | Domain Abbreviation       |
| USUBJID       | Unique Subject Identifier |
| DVSEQ         | Sequence Number           |
| DVTERM        | Protocol Deviation Term   |

---

|              |                     |
|--------------|---------------------|
| Events-class | <i>Events class</i> |
|--------------|---------------------|

---

Description

Events class

Fields

- ae\_1 Adverse Events data [AE](#) and supplemental Adverse Events data [SUPP](#)
- dv\_1 Protocol Deviations data [DV](#) and supplemental Protocol Deviations data [SUPPDV](#)
- mh\_1 Medical History data [MH](#) and supplemental Medical History data [SUPPMH](#)
- apmh\_1 Associated Persons Medical History data [APMH](#) and supplemental Associated Persons Medical History data [SUPP](#)

Examples

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
sdy139 <- getStudy("SDY139")
ae_df <- sdy139$events$ae_1$ae_df
```



EX

*Exposure Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>           |
|----------------------|---------------------------------|
| STUDYID              | Study Identifier                |
| DOMAIN               | Domain Abbreviation             |
| USUBJID              | Unique Subject Identifier       |
| EXSEQ                | Sequence Number                 |
| EXTRT                | Name of Treatment               |
| EXCAT                | Category of Treatment           |
| EXDOSE               | Dose                            |
| EXDOSTXT             | Dose Description                |
| EXDOSU               | Dose Units                      |
| EXDOSFRQ             | Dosing Frequency per Interval   |
| EXROUTE              | Route of Administration         |
| EXSTDTC              | Start Date/Time of Treatment    |
| EXENDTC              | End Date/Time of Treatment      |
| EXSTDY               | Study Day of Start of Treatment |
| EXENDY               | Study Day of End of Treatment   |

Exposure Domain

*Exposure Domain***Description**

The Exposure data of an ImmPort study is reformatted to the CDISC SDTM Exposure (EX) domain model, and is a list of 2 data frames containing 1) Exposure data [EX](#) and 2) any supplemental Exposure data [SUPP](#)

---

|    |                                        |
|----|----------------------------------------|
| FA | <i>Findings About Domain Variables</i> |
|----|----------------------------------------|

---

**Description**

| Variable Name | Variable Label                        |
|---------------|---------------------------------------|
| STUDYID       | Study Identifier                      |
| DOMAIN        | Domain Abbreviation                   |
| USUBJID       | Unique Subject Identifier             |
| FASEQ         | Sequence Number                       |
| FATEST        | Findings About Test Name              |
| FAOBJ         | Object of the Observation             |
| FACAT         | Category for Findings About           |
| FAORRES       | Results or Findings in Original Units |
| FAORRESU      | Original Units                        |
| FALOC         | Location of the Finding About         |
| VISITNUM      | Visit Number                          |
| VISIT         | Visit Name                            |
| FADY          | Study Day of Collection               |

---

|                       |                              |
|-----------------------|------------------------------|
| Findings About Domain | <i>Findings About Domain</i> |
|-----------------------|------------------------------|

---

**Description**

The Findings About data of an ImmPort study is reformed to the CDISC SDTM Findings About (FA) domain model, and is a list of 2 data frames containing 1) Findings About data [FA](#) and 2) any supplemental Findings About data [SUPPFA](#)

---

|                |                       |
|----------------|-----------------------|
| Findings-class | <i>Findings class</i> |
|----------------|-----------------------|

---

**Description**

Findings class

**Fields**

lb\_1 Laboratory Test Results data [LB](#) and supplemental Laboratory Test Results data [SUPPLB](#)  
pe\_1 Physical Examination data [PE](#) and supplemental Physical Examination data [SUPPPE](#)  
vs\_1 Vital Signs data [VS](#) and supplemental Vital Signs data [SUPPVS](#)  
qs\_1 Questionnaires data [QS](#) and supplemental Questionnaires data [SUPP](#)  
fa\_1 Findings About data [FA](#) and supplemental Findings About data [SUPPFA](#)  
sr\_1 Skin Response data [SR](#) and supplemental Skin Response data [SUPP](#)  
pf\_1 Genetics Findings data [PF](#) and supplemental Genetics Findings data [SUPPPF](#)  
za\_1 Protein Quantification data [ZA](#) and supplemental Protein Quantification data [SUPPZA](#)  
zb\_1 Cellular Quantification data [ZB](#) and supplemental Cellular Quantification data [SUPP](#)  
zc\_1 Nucleic Acid Quantification data [ZC](#) and supplemental Nucleic Acid Quantification data [SUPP](#)  
zd\_1 Titer Assay Results data [ZD](#) and supplemental Titer Assay Results data [SUPP](#)

**Examples**

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
sdy139 <- getStudy("SDY139")
zb_df <- sdy139$findings$zb_1$zb_df
```

---

Genetics Findings Domain

*Genetics Findings Domain*

---

**Description**

The ImmPort study data generated from assays of types: HLA Typing and Array are grouped into the Genetics Findings Domain. The data is reformatted to a Pharmacogenomics and Genetics Findings (PF) model in CDISC SDTM standards, and is a list of 2 data frames containing 1) Genetics Findings data [PF](#) and 2) any supplemental Genetics Findings data [SUPP](#)

---

`getAssayDataOfStudies` *Get specific assay data of one or more studies from the ImmPort database*

---

## Description

Get specific assay data of one or more studies from the ImmPort database

## Usage

```
getAssayDataOfStudies(study_ids, assay_type)
```

## Arguments

|                         |                            |
|-------------------------|----------------------------|
| <code>study_ids</code>  | List of study indentifiers |
| <code>assay_type</code> | Assay Type                 |

## Value

a list of 1) domain data of specicifc assay technology and 2) any supplemental domain data of the studies

## Author(s)

Ravi Shankar

## Examples

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
elispot_1 <- getAssayDataOfStudies("SDY139", "ELISPOT")
if (length(elispot_1) > 0)
  names(elispot_1)
head(elispot_1$zb_df)
```

---

|               |                                      |
|---------------|--------------------------------------|
| getDomainCode | <i>Get code of a specific domain</i> |
|---------------|--------------------------------------|

---

**Description**

The function `getListOfDomains` returns the code of a specific domain

**Usage**

```
getDomainCode(domain)
```

**Arguments**

|        |                           |
|--------|---------------------------|
| domain | Name of a specific domain |
|--------|---------------------------|

**Value**

A list of of all domain names and codes

**Examples**

```
domain <- "Demographics"  
code <- getDomainCode(domain)
```

---

|                        |                                                                                  |
|------------------------|----------------------------------------------------------------------------------|
| getDomainDataOfStudies | <i>Get specific domain data of one or more studies from the ImmPort database</i> |
|------------------------|----------------------------------------------------------------------------------|

---

**Description**

Get specific domain data of one or more studies from the ImmPort database

**Usage**

```
getDomainDataOfStudies(domain, study_ids)
```

**Arguments**

|           |                            |
|-----------|----------------------------|
| domain    | Name of a specific domain  |
| study_ids | List of study indentifiers |

**Value**

a list of 1) domain data and 2) supplemental domain data of the studies

**Examples**

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
dm_df <- getDomainDataOfStudies("Demographics", "SDY139")
```

---

|                     |                                  |
|---------------------|----------------------------------|
| getListOfAssayTypes | <i>Get a list of Assay Types</i> |
|---------------------|----------------------------------|

---

**Description**

The function `getListOfAssayTypes` returns a list of assay types that ImmPort studies have employed in their experimental assays

**Usage**

```
getListOfAssayTypes()
```

**Value**

A list of assay types

**Examples**

```
at_l <- getListOfAssayTypes()
```

---

|                  |                                                 |
|------------------|-------------------------------------------------|
| getListOfDomains | <i>Get names of all domains and their codes</i> |
|------------------|-------------------------------------------------|

---

**Description**

The function `getListOfDomains` returns a list of all domain names and codes

**Usage**

```
getListOfDomains()
```

**Value**

A list of of all domain names and codes

**Examples**

```
domains_df <- getListOfDomains()
```

---

|                  |                                  |
|------------------|----------------------------------|
| getListOfStudies | <i>Get a list of all studies</i> |
|------------------|----------------------------------|

---

**Description**

Get a list of all studies

**Usage**

```
getListOfStudies()
```

**Value**

List of study indentifiers

**Examples**

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
study_ids <- getListOfStudies()
```

---

|                                 |                                                                 |
|---------------------------------|-----------------------------------------------------------------|
| getStudiesWithSpecificAssayData | <i>Get a list of studies that have specific assay type data</i> |
|---------------------------------|-----------------------------------------------------------------|

---

**Description**

Get a list of studies that have specific assay type data

**Usage**

```
getStudiesWithSpecificAssayData(assay_type, all_study_ids = c("ALL"))
```

**Arguments**

|               |                                         |
|---------------|-----------------------------------------|
| assay_type    | Assay Type                              |
| all_study_ids | List of study indentifiers to search on |

**Value**

List of study indentifiers

## Examples

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
study_ids <- getStudiesWithSpecificAssayData("ELISPOT")
```

---

```
getStudiesWithSpecificDomainData
```

*Get a list of studies that have specific domain data*

---

## Description

Get a list of studies that have specific domain data

## Usage

```
getStudiesWithSpecificDomainData(domain, all_study_ids = c("ALL"))
```

## Arguments

|               |                                         |
|---------------|-----------------------------------------|
| domain        | Name of a specific domain               |
| all_study_ids | List of study indentifiers to search on |

## Value

List of study indentifiers

## Examples

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
study_ids <- getStudiesWithSpecificDomainData("Demographics")
```



---

`getStudy`*Get all data of a specific study from the ImmPort data source*

---

**Description**

The function `getStudy` queries the ImmPort data source for data of a specific study in all domains. The data is then structured into `Study` as classes, domains, variables and values.

**Usage**

```
getStudy(study_id)
```

**Arguments**

`study_id`            Identifier of a specific study

**Value**

A study data object where in all data are structured as classes, domains, variables and values (in CDISC format)

**Examples**

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
sdy139 <- getStudy("SDY139")
```

---

`Interventions-class`    *Interventions class*

---

**Description**

Interventions class

**Fields**

`cm_1` Concomitant Medications data [CM](#) and supplemental Concomitant Medications data [SUPP](#)  
`ex_1` Exposure data [EX](#) and supplemental Exposure data [SUPP](#)  
`su_1` Substance Use data [SU](#) and supplemental Substance Use data [SUPP](#)

## Examples

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
sdy139 <- getStudy("SDY139")
cm_df <- sdy139$interventions$cm_l$cm_df
```

---

Laboratory Test Results Domain

*Laboratory Test Results Domain*

---

## Description

The Laboratory Test Results data of an ImmPort study is reformatted to the CDISC SDTM Laboratory Test Results (LB) domain model, and is a list of 2 data frames containing 1) Laboratory Test Results data [LB](#) and 2) any supplemental Laboratory Test Results data [SUPPLB](#)

---

LB

*Laboratory Test Results Domain Variables*

---

## Description

| Variable Name | Variable Label                           |
|---------------|------------------------------------------|
| STUDYID       | Study Identifier                         |
| DOMAIN        | Domain Abbreviation                      |
| USUBJID       | Unique Subject Identifier                |
| LBSEQ         | Sequence Number                          |
| LBTEST        | Lab Test or Examination Name             |
| LBCAT         | Category for Lab Test                    |
| LBORRES       | Result or Finding in Original Units      |
| LBORRESU      | Original Units                           |
| LBSPEC        | Specimen Type                            |
| LBREFID       | Specimen Identifier                      |
| VISITNUM      | Visit Number                             |
| VISIT         | Visit Name                               |
| LBELTM        | Planned Elapsed Time from Time Point Ref |
| LBTPTRF       | Time Point Reference                     |

---

`loadSerializedStudyData`*Load the Serialized Data of a Study*

---

**Description**

Load the serialized data (.rds) file of a specific domain of a study study from the directory where the file is located

**Usage**

```
loadSerializedStudyData(data_dir, study_id, domain)
```

**Arguments**

|                       |                                                         |
|-----------------------|---------------------------------------------------------|
| <code>data_dir</code> | Path to a file folder where the .rds study files reside |
| <code>study_id</code> | Study identifier                                        |
| <code>domain</code>   | Domain of interest                                      |

**Value**

A study data object where in all data are structured as classes, domains, variables and values (in CDISC format)

**Examples**

```
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
# the folder where the .rds files will be stored
rds_dir <- file.path(studies_dir, "Rds")
# load the serialized data of study `SDY208`
loadSerializedStudyData(rds_dir, 'SDY208', "Demographics")
```

---

`Medical History Domain`*Medical History Domain*

---

**Description**

The Medical History data of an ImmPort study is reformatted to the CDISC SDTM Medical History (MH) domain model, and is a list of 2 data frames containing 1) Medical History data [MH](#) and 2) any supplemental Medical History data [SUPPMH](#)

---

```
mergeDomainAndSupplemental
```

*Merge the Domain dataframe and Supplemental dataframe (long form)*

---

### Description

The Domain data list comprises of the the Domain dataframe that is in wide form, and any Supplemental dataframe that is in long form. The function `mergeDomainAndSupplemental` transposes the Supplemental dataframe into a wide form, and merges it with the Domain dataframe.

### Usage

```
mergeDomainAndSupplemental(data_list)
```

### Arguments

`data_list`      A list of 1) Domain dataframe and 2) any Supplemental dataframe

### Value

The merged dataframe

### Examples

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
l <- getDomainDataOfStudies("Cellular Quantification", "SDY208")
df <- mergeDomainAndSupplemental(l)
```

---

MH

*Medical History Domain Variables*

---

### Description

| Variable Name | Variable Label                        |
|---------------|---------------------------------------|
| STUDYID       | Study Identifier                      |
| DOMAIN        | Domain Abbreviation                   |
| USUBJID       | Unique Subject Identifier             |
| MHSEQ         | Sequence Number                       |
| MHTERM        | Reported Term for the Medical History |

|          |                                 |
|----------|---------------------------------|
| MHCAT    | Category for Medical History    |
| MHBODSYS | Body System or Organ Class      |
| MHDY     | Study Day of History Collection |

---

Nucleic Acid Quantification Domain

*Nucleic Acid Quantification Domain*

---

### Description

The ImmPort study data generated from assays of types: PCR are grouped into the Nucleic Acid Quantification Domain. The data is reformatted to a custom Nucleic Acid Quantification domain model in CDISC SDTM standards, and is a list of 2 data frames containing 1) Nucleic Acid Quantification data [ZC](#) and 2) any supplemental Nucleic Acid Quantification data [SUPP](#)

---

PE

*Physical Examination Domain Variables*

---

### Description

| Variable Name | Variable Label                    |
|---------------|-----------------------------------|
| STUDYID       | Study Identifier                  |
| DOMAIN        | Domain Abbreviation               |
| USUBJID       | Unique Subject Identifier         |
| PESEQ         | Sequence Number                   |
| PETEST        | Body System Examined              |
| PECAT         | Category for Examination          |
| PEBODSYS      | Body System or Organ Class        |
| PEORRES       | Verbatim Examination Finding      |
| PEORRESU      | Original Units                    |
| PELOC         | Location of Physical Exam Finding |
| VISITNUM      | Visit Number                      |
| VISIT         | Visit Name                        |
| PEDY          | Study Day of Examination          |

PF

*Genetics Findings Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>                    |
|----------------------|------------------------------------------|
| STUDYID              | Study Identifier                         |
| DOMAIN               | Domain Abbreviation                      |
| USUBJID              | Unique Subject Identifier                |
| PFSEQ                | Sequence Number                          |
| PFGRPID              | Group Identifier                         |
| PFTTEST              | Test Name                                |
| PFCAT                | Category for Test                        |
| PFMETHOD             | Method of the Test                       |
| PFGENRI              | Genetic Region of Interest               |
| PFORRES              | Result or Finding in Original Units      |
| PFALLELC             | Allele (Chromosome) Identifier           |
| PFSPEC               | Specimen Type                            |
| PFREFID              | Reference ID (Specimen Identifier)       |
| VISITNUM             | Visit Number                             |
| VISIT                | Visit Name                               |
| PFELTM               | Planned Elapsed Time from Time Point Ref |
| PFTPTREF             | Time Point Reference                     |
| PFXFN                | Raw Data File or Life Science Identifier |

Physical Examination Domain

*Physical Examination Domain***Description**

The Physical Examination data of an ImmPort study is reformatted to the CDISC SDTM Physical Examination (PE) domain model, and is a list of 2 data frames containing 1) Physical Examination data [PE](#) and 2) any supplemental Physical Examination data [SUPPPE](#)

---

Protein Quantification Domain

*Protein Quantification Domain*


---

**Description**

The ImmPort study data generated from assays of types: ELISA and MBAA are grouped into the Cellular Quantification Domain. The data is reformatted to a custom Protein Quantification domain model in CDISC SDTM standards, and is a list of 2 data frames containing 1) Protein Quantification data [ZA](#) and 2) any supplemental Protein Quantification data [SUPP](#)

---

Protocol Deviations Domain

*Protocol Deviations Domain*


---

**Description**

The Protocol Deviations data of an ImmPort study is reformatted to the CDISC SDTM Protocol Deviations (DV) domain model, and is a list of 2 data frames containing 1) Protocol Deviations data [DV](#) and 2) any supplemental Protocol Deviations data [SUPPDV](#)

---

QS

*Questionnaires Domain Variables*


---

**Description**

| Variable Name | Variable Label                        |
|---------------|---------------------------------------|
| STUDYID       | Study Identifier                      |
| DOMAIN        | Domain Abbreviation                   |
| USUBJID       | Unique Subject Identifier             |
| QSSEQ         | Sequence Number                       |
| QSTEST        | Questionnaires Test Name              |
| QSCAT         | Category for Questionnaires           |
| QSORRES       | Results or Findings in Original Units |
| QSORRESU      | Original Units                        |
| VISITNUM      | Visit Number                          |
| VISIT         | Visit Name                            |
| QSDY          | Study Day of Finding                  |

---

|                       |                              |
|-----------------------|------------------------------|
| Questionnaires Domain | <i>Questionnaires Domain</i> |
|-----------------------|------------------------------|

---

**Description**

The Questionnaires data of an ImmPort study is reformed to the CDISC SDTM Questionnaires (QS) domain model, and is a list of 2 data frames containing 1) Questionnaires data [QS](#) and 2) any supplemental Questionnaires data [SUPP](#)

---

|          |                                                                       |
|----------|-----------------------------------------------------------------------|
| RImmPort | <i>RImmPort: Enabling ready-for-analysis immunology research data</i> |
|----------|-----------------------------------------------------------------------|

---

**Description**

The ‘RImmPort’ package simplifies access to ImmPort data for analysis, as the name implies, in the R statistical environment. It provides a standards-based interface to the ImmPort study data that is in a proprietary format.

---

|                    |                                 |
|--------------------|---------------------------------|
| serializeStudyData | <i>Serialize the Study Data</i> |
|--------------------|---------------------------------|

---

**Description**

Load specific studies from the database and save it in .rds format in a local file directory

**Usage**

```
serializeStudyData(study_ids, data_dir)
```

**Arguments**

- |           |                                                                     |
|-----------|---------------------------------------------------------------------|
| study_ids | List of study indentifiers                                          |
| data_dir  | Path to a file folder where the .rds study files will be saved into |

**Value**

List of study indentifiers that were serialized successfully



## Examples

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
# the folder where the .rds files will be stored
rds_dir <- file.path(studies_dir, "Rds")
study_ids <- c('SDY139', 'SDY208')
serializeStudyData(study_ids, rds_dir)
```

---

|                      |                                |
|----------------------|--------------------------------|
| setImmPortDataSource | <i>Set ImmPort data source</i> |
|----------------------|--------------------------------|

---

## Description

The function `setImmPortDataSource` sets the data source variable in `RImmPort` environment, to the connection handle to the MySQL or SQLite database, or to the file directory where the pre-created `RImmPort`-formatted files are stored.

## Usage

```
setImmPortDataSource(data_src)
```

## Arguments

|                       |                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>data_src</code> | A connection handle to ImmPort (MySQL or SQLite) database instance or a directory handle to folder where study RImmPort-formatted (.rds) files located |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|

## Value

1 if successful

## Examples

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
```

---

|                      |                             |
|----------------------|-----------------------------|
| Skin Response Domain | <i>Skin Response Domain</i> |
|----------------------|-----------------------------|

---

**Description**

The Skin Response data of an ImmPort study is reformatted to the CDISC SDTM Skin Response (SR) domain model, and is a list of 2 data frames containing 1) Skin Response data [SR](#) and 2) any supplemental Skin Response data [SUPP](#)

---

|                      |                              |
|----------------------|------------------------------|
| SpecialPurpose-class | <i>Special Purpose class</i> |
|----------------------|------------------------------|

---

**Description**

Special Purpose class

**Fields**

dm\_1 Demographics data [DM](#) and supplemental Demographics data [SUPP](#)

**Examples**

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
sdy139 <- getStudy("SDY139")
dm_df <- sdy139$special_purpose$dm_1$dm_df
```

---

|    |                                       |
|----|---------------------------------------|
| SR | <i>Skin Response Domain Variables</i> |
|----|---------------------------------------|

---

**Description**

| Variable Name | Variable Label                         |
|---------------|----------------------------------------|
| STUDYID       | Study Identifier                       |
| DOMAIN        | Domain Abbreviation                    |
| USUBJID       | Unique Subject Identifier              |
| SRSEQ         | Sequence Number                        |
| SRTEST        | Skin Response Test or Examination Name |
| SROBJ         | Object of the Observation              |

|          |                                       |
|----------|---------------------------------------|
| SRCAT    | Category for Test                     |
| SRORRES  | Results or Findings in Original Units |
| SRORRESU | Original Units                        |
| SRLOC    | Location used for Measurement         |
| VISITNUM | Visit Number                          |
| VISIT    | Visit Name                            |
| SRDY     | Study Day of Visit/Collection/Exam    |

---

|             |                    |
|-------------|--------------------|
| Study-class | <i>Study class</i> |
|-------------|--------------------|

---

**Description**

Study class

**Fields**

special\_purpose [SpecialPurpose](#)  
interventions [Interventions](#)  
events [Events](#)  
findings [Findings](#)  
trial\_design [TrialDesign](#)

**Examples**

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
sdy139 <- getStudy("SDY139")
```

SU

*Substance Use Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>               |
|----------------------|-------------------------------------|
| STUDYID              | Study Identifier                    |
| DOMAIN               | Domain Abbreviation                 |
| USUBJID              | Unique Subject Identifier           |
| SUSEQ                | Sequence Number                     |
| SUTRT                | Reported Name of Substance          |
| SUCAT                | Category of Substance Use           |
| SUDOSE               | Substance Use Consumption           |
| SUDOSTXT             | Substance Use Consumption Text      |
| SUDOSU               | Consumption Units                   |
| SUDOSFRQ             | Use Frequency per Interval          |
| SUROUTE              | Route of Administration             |
| SUSTDTC              | Start Date/Time of Substance Use    |
| SUENDTC              | End Date/Time of Substance Use      |
| SUSTDY               | Study Day of Start of Substance Use |
| SUENDY               | Study Day of End of Substance Use   |

Subject Visits Domain *Subject Visits Domain***Description**

Actual subject visits data of an ImmPort study is reformatted to the CDISC SDTM Subject Visits (SV) domain model, and is a list of 2 data frames containing 1) Subject Visits data [SV](#) and 2) any supplemental Subject Visits data [SUPP](#)

Substance Use Domain *Substance Use Domain***Description**

The Substance Use data of an ImmPort study is reformatted to the CDISC SDTM Substance Use (SU) domain model, and is a list of 2 data frames containing 1) Substance Use data [SU](#) and 2) any supplemental Substance Use data [SUPP](#)

---

|      |                               |
|------|-------------------------------|
| SUPP | <i>Supplemental Variables</i> |
|------|-------------------------------|

---

**Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| RDOMAIN              | Related Domain Abbreviation |
| USUBJID              | Unique Subject Identifier   |
| IDVAR                | Identifying Variable        |
| IDVARVAL             | Identifying Variable Value  |
| QNAM                 | Qualifier Variable Name     |
| QLABEL               | Qualifier Variable Label    |
| QVAL                 | Data Value                  |

---

|        |                                                          |
|--------|----------------------------------------------------------|
| SUPPDV | <i>Protocol Deviations Domain Supplemental Variables</i> |
|--------|----------------------------------------------------------|

---

**Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| RDOMAIN              | Related Domain Abbreviation |
| USUBJID              | Unique Subject Identifier   |
| IDVAR                | Identifying Variable        |
| IDVARVAL             | Identifying Variable Value  |
| QNAM                 | Qualifier Variable Name     |
| QLABEL               | Qualifier Variable Label    |
| QVAL                 | Data Value                  |

**Note**

The following table enumerates the values in QNAM and QLABEL variables

| <b>QNAM</b> | <b>QLABEL</b>                             |
|-------------|-------------------------------------------|
| DVRELA      | Is Deviation Related to an Adverse Event? |
| DVREASON    | Reason for Deviation                      |
| DVRESOL     | Resolution of Deviation                   |
| DVCONT      | Did Subject continued in Study?           |

|        |                                 |
|--------|---------------------------------|
| DVSTDY | Study Day of Start of Deviation |
| DVENDY | Study Day of End of Deviation   |

SUPPFA

*Findings About Domain Supplemental Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| RDOMAIN              | Related Domain Abbreviation |
| USUBJID              | Unique Subject Identifier   |
| FASEQ                | Sequence Number             |
| IDVAR                | Identifying Variable        |
| IDVARVAL             | Identifying Variable Value  |
| QNAM                 | Qualifier Variable Name     |
| QLABEL               | Qualifier Variable Label    |
| QVAL                 | Data Value                  |

**Note**

The following table enumerates the values in QNAM and QLABEL variables

| <b>QNAM</b> | <b>QLABEL</b>             |
|-------------|---------------------------|
| FATOD       | Time of Day of Collection |

SUPPLB

*Laboratory Test Results Domain Supplemental Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| RDOMAIN              | Related Domain Abbreviation |
| USUBJID              | Unique Subject Identifier   |
| IDVAR                | Identifying Variable        |
| IDVARVAL             | Identifying Variable Value  |
| QNAM                 | Qualifier Variable Name     |
| QLABEL               | Qualifier Variable Label    |

|      |            |
|------|------------|
| QVAL | Data Value |
|------|------------|

**Note**

The following table enumerates the values in QNAM and QLABEL variables

| QNAME    | QLABEL                          |
|----------|---------------------------------|
| LBSPECSB | Specimen Subtype                |
| VISITMIN | Planned Visit Minimum Start Day |
| VISITMAX | Planned Visit Maximum Start Day |

SUPPMH

*Medical History Domain Supplemental Variables***Description**

| Variable Name | Variable Label              |
|---------------|-----------------------------|
| STUDYID       | Study Identifier            |
| RDOMAIN       | Related Domain Abbreviation |
| USUBJID       | Unique Subject Identifier   |
| MHSEQ         | Sequence Number             |
| IDVAR         | Identifying Variable        |
| IDVARVAL      | Identifying Variable Value  |
| QNAME         | Qualifier Variable Name     |
| QLABEL        | Qualifier Variable Label    |
| QVAL          | Data Value                  |

**Note**

The following table enumerates the values in QNAME and QLABEL variables

| QNAME  | QLABEL             |
|--------|--------------------|
| MHAGE  | Age at Onset       |
| MHAGEU | Age at Onset Units |
| MHTOD  | Time of Day        |

SUPPPE

*Physical Examination Domain Supplemental Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| RDOMAIN              | Related Domain Abbreviation |
| USUBJID              | Unique Subject Identifier   |
| PESEQ                | Sequence Number             |
| IDVAR                | Identifying Variable        |
| IDVARVAL             | Identifying Variable Value  |
| QNAM                 | Qualifier Variable Name     |
| QLABEL               | Qualifier Variable Label    |
| QVAL                 | Data Value                  |

**Note**

The following table enumerates the values in QNAM and QLABEL variables

| <b>QNAM</b> | <b>QLABEL</b> |
|-------------|---------------|
| PETOD       | Time of Day   |

SUPPPF

*Genetics Findings Domain Supplemental Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| RDOMAIN              | Related Domain Abbreviation |
| USUBJID              | Unique Subject Identifier   |
| IDVAR                | Identifying Variable        |
| IDVARVAL             | Identifying Variable Value  |
| QNAM                 | Qualifier Variable Name     |
| QLABEL               | Qualifier Variable Label    |
| QVAL                 | Data Value                  |



**Note**

The following table enumerates the values in QNAM and QLABEL variables

| <b>QNAME</b> | <b>QLABEL</b>                        |
|--------------|--------------------------------------|
| PFPOPAR      | Geographic Area of the Population    |
| PFSPECSB     | Specimen Subtype                     |
| PFREFIDP     | Source Specimen Identifier           |
| VISITMIN     | Planned Visit Minimum Start Day      |
| VISITMAX     | Planned Visit Maximum Start Day      |
| PFSPTRT      | Specimen Treatment                   |
| PFTRTAMV     | Specimen Treatment Amount Value      |
| PFTRTAMU     | Specimen Treatment Amount Unit       |
| PFTRTDUV     | Specimen Treatment Duration Value    |
| PFTRTDUU     | Specimen Treatment Duration Unit     |
| PFTRTTMV     | Specimen Treatment Temperature Value |
| PFTRTTMU     | Specimen Treatment Temperature Unit  |

SUPPVS

*Vital Signs Domain Supplemental Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| RDOMAIN              | Related Domain Abbreviation |
| USUBJID              | Unique Subject Identifier   |
| VSSEQ                | Sequence Number             |
| IDVAR                | Identifying Variable        |
| IDVARVAL             | Identifying Variable Value  |
| QNAME                | Qualifier Variable Name     |
| QLABEL               | Qualifier Variable Label    |
| QVAL                 | Data Value                  |

**Note**

The following table enumerates the values in QNAME and QLABEL variables

| <b>QNAME</b> | <b>QLABEL</b> |
|--------------|---------------|
| VSTOD        | Time of Day   |

SUPPZA

*Protein Quantification Domain Supplemental Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| RDOMAIN              | Related Domain Abbreviation |
| USUBJID              | Unique Subject Identifier   |
| IDVAR                | Identifying Variable        |
| IDVARVAL             | Identifying Variable Value  |
| QNAM                 | Qualifier Variable Name     |
| QLABEL               | Qualifier Variable Label    |
| QVAL                 | Data Value                  |

**Note**

The following table enumerates the values in QNAM and QLABEL variables

| <b>QNAM</b> | <b>QLABEL</b>                        |
|-------------|--------------------------------------|
| ZAMFI       | MFI                                  |
| ZAMFICRD    | MFI Coordinate                       |
| ZASPECSB    | Specimen Subtype                     |
| ZAREFIDP    | Source Specimen Identifier           |
| VISITMIN    | Planned Visit Minimum Start Day      |
| VISITMAX    | Planned Visit Maximum Start Day      |
| ZASPTRT     | Specimen Treatment                   |
| ZATRTAMV    | Specimen Treatment Amount Value      |
| ZATRTAMU    | Specimen Treatment Amount Unit       |
| ZATRTDUV    | Specimen Treatment Duration Value    |
| ZATRTDUU    | Specimen Treatment Duration Unit     |
| ZATRTTMV    | Specimen Treatment Temperature Value |
| ZATRTTMU    | Specimen Treatment Temperature Unit  |

SUPPZB

*Cellular Quantification Domain Supplemental Variables*

**Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| RDOMAIN              | Related Domain Abbreviation |
| USUBJID              | Unique Subject Identifier   |
| IDVAR                | Identifying Variable        |
| IDVARVAL             | Identifying Variable Value  |
| QNAM                 | Qualifier Variable Name     |
| QLABEL               | Qualifier Variable Label    |
| QVAL                 | Data Value                  |

**Note**

The following table enumerates the values in QNAM and QLABEL variables

| <b>QNAM</b> | <b>QLABEL</b>                        |
|-------------|--------------------------------------|
| ZBSPECSB    | Specimen Subtype                     |
| ZBREFIDP    | Source Specimen Identifier           |
| ZBFCF       | Control Files Names                  |
| VISITMIN    | Planned Visit Minimum Start Day      |
| VISITMAX    | Planned Visit Maximum Start Day      |
| ZBSPTRT     | Specimen Treatment                   |
| ZBTRTAMV    | Specimen Treatment Amount Value      |
| ZBTRTAMU    | Specimen Treatment Amount Unit       |
| ZBTRTDUV    | Specimen Treatment Duration Value    |
| ZBTRTDUU    | Specimen Treatment Duration Unit     |
| ZBTRTTMV    | Specimen Treatment Temperature Value |
| ZBTRTTMU    | Specimen Treatment Temperature Unit  |

SUPPZC

*Nucleic Acid Quantification Domain Supplemental Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| RDOMAIN              | Related Domain Abbreviation |
| USUBJID              | Unique Subject Identifier   |
| IDVAR                | Identifying Variable        |
| IDVARVAL             | Identifying Variable Value  |
| QNAM                 | Qualifier Variable Name     |
| QLABEL               | Qualifier Variable Label    |

|      |            |
|------|------------|
| QVAL | Data Value |
|------|------------|

**Note**

The following table enumerates the values in QNAM and QLABEL variables

| <b>QNAM</b> | <b>QLABEL</b>                        |
|-------------|--------------------------------------|
| ZCSPECSB    | Specimen Subtype                     |
| ZCREFIDP    | Source Specimen Identifier           |
| VISITMIN    | Planned Visit Minimum Start Day      |
| VISITMAX    | Planned Visit Maximum Start Day      |
| ZCSPTRT     | Specimen Treatment                   |
| ZCTRRTAMV   | Specimen Treatment Amount Value      |
| ZCTRRTAMU   | Specimen Treatment Amount Unit       |
| ZCTRRTDUV   | Specimen Treatment Duration Value    |
| ZCTRRTDUU   | Specimen Treatment Duration Unit     |
| ZCTRRTMV    | Specimen Treatment Temperature Value |
| ZCTRRTMU    | Specimen Treatment Temperature Unit  |

SUPPZD

*Titer Assay Results Domain Supplemental Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| RDOMAIN              | Related Domain Abbreviation |
| USUBJID              | Unique Subject Identifier   |
| IDVAR                | Identifying Variable        |
| IDVARVAL             | Identifying Variable Value  |
| QNAM                 | Qualifier Variable Name     |
| QLABEL               | Qualifier Variable Label    |
| QVAL                 | Data Value                  |

**Note**

The following table enumerates the values in QNAM and QLABEL variables

| <b>QNAM</b> | <b>QLABEL</b>              |
|-------------|----------------------------|
| ZDSPECSB    | Specimen Subtype           |
| ZDREFIDP    | Source Specimen Identifier |

|          |                                      |
|----------|--------------------------------------|
| VISITMIN | Planned Visit Minimum Start Day      |
| VISITMAX | Planned Visit Maximum Start Day      |
| ZDSPTRT  | Specimen Treatment                   |
| ZDTRTAMV | Specimen Treatment Amount Value      |
| ZDTRTAMU | Specimen Treatment Amount Unit       |
| ZDTRTDUV | Specimen Treatment Duration Value    |
| ZDTRTDUU | Specimen Treatment Duration Unit     |
| ZDTRTTMV | Specimen Treatment Temperature Value |
| ZDTRTTMU | Specimen Treatment Temperature Unit  |

SV

*Subject Visits Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>       |
|----------------------|-----------------------------|
| STUDYID              | Study Identifier            |
| DOMAIN               | Domain Abbreviation         |
| USUBJID              | Unique Subject Identifier   |
| VISITNUM             | Visit Number                |
| VISIT                | Visit Name                  |
| SVSTDY               | Study Day of Start of Visit |

TA

*Trial Arms Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>      |
|----------------------|----------------------------|
| STUDYID              | Study Identifier           |
| DOMAIN               | Domain Abbreviation        |
| ARMCD                | Planned Arm Code           |
| ARM                  | Name of Planned Arm        |
| ARMDESC              | Description of Planned Arm |
| ARMRULE              | Population Selection Rule  |

TI

*Trial Inclusion Exclusion Criteria Domain Variables***Description**

| Variable Name | Variable Label                |
|---------------|-------------------------------|
| STUDYID       | Study Identifier              |
| DOMAIN        | Domain Abbreviation           |
| IETEST        | Inclusion/Exclusion Criterion |
| IECAT         | Inclusion/Exclusion Category  |

Titer Assay Results Domain

*Titer Assay Results Domain***Description**

The ImmPort study data generated from assays of types: HAI and Neut Ab Titer are grouped into the Titer Assay Results Domain. The data is reformatted to a custom Titer Assay Results domain model in CDISC SDTM standards, and is a list of 2 data frames containing 1) Titer Assay Results data [ZD](#) and 2) any supplemental Titer Assay Results data [SUPP](#)

Trial Arms Domain

*Trial Arms Domain***Description**

The Trial Arms data of an ImmPort study is reformatted to the CDISC SDTM Trial Arms (TA) domain model, and is a list of 2 data frames containing 1) Trial Arms data [TA](#) and 2) any supplemental Trial Arms data [SUPP](#)

Trial Inclusion Exclusion Criteria Domain

*Trial Inclusion Exclusion Criteria Domain***Description**

The Trial Inclusion Exclusion Criteria data of an ImmPort study is reformatted to the CDISC SDTM Trial Inclusion Exclusion Criteria (TI) domain model, and is a list of 2 data frames containing 1) Trial Inclusion Exclusion Criteria data [TI](#) and 2) any supplemental Trial Inclusion Exclusion Criteria data [SUPP](#)

---

|                      |                             |
|----------------------|-----------------------------|
| Trial Summary Domain | <i>Trial Summary Domain</i> |
|----------------------|-----------------------------|

---

**Description**

The Trial Summary data of an ImmPort study is reformatted to the CDISC SDTM Trial Summary (TS) domain model, and is a list of 2 data frames containing 1) Trial Summary data [TS](#) and 2) any supplemental Trial Summary data [SUPP](#)

---

|                     |                            |
|---------------------|----------------------------|
| Trial Visits Domain | <i>Trial Visits Domain</i> |
|---------------------|----------------------------|

---

**Description**

Information on the planned visits of an ImmPort study is reformatted to the CDISC SDTM Trial Visits (TV) domain model, and is a list of 2 data frames containing 1) Trial Visits data [TV](#) and 2) any supplemental Trial Visits data [SUPP](#)

---

|                   |                           |
|-------------------|---------------------------|
| TrialDesign-class | <i>Trial Design class</i> |
|-------------------|---------------------------|

---

**Description**

Trial Design class

**Fields**

- ta\_l Trial Arms data [TA](#) and supplemental Trial Arms data [SUPP](#)
- tv\_l Trial Visits data [TA](#) and supplemental Trial Visits data [SUPP](#)
- ti\_l Trial Inclusion Exclusion Criteria data [TI](#) and supplemental Trial Inclusion Exclusion Criteria data [SUPP](#)
- ts\_l Trial Summary data [TS](#) and supplemental Trial Summary data [SUPP](#)

**Examples**

```
library(DBI)
library(sqldf)
studies_dir <- system.file("extdata", "ImmPortStudies", package = "RImmPort")
db_dir <- file.path(studies_dir, "Db")
sqlite_conn <- dbConnect(SQLite(), dbname=file.path(db_dir, "ImmPort.sqlite"))
setImmPortDataSource(sqlite_conn)
sdy139 <- getStudy("SDY139")
ts_df <- sdy139$trial_design$ts_l$ts_df
```

TS

*Trial Summary Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>              |
|----------------------|------------------------------------|
| STUDYID              | Study Identifier                   |
| DOMAIN               | Domain Abbreviation                |
| TSSEQ                | Sequence Number                    |
| TSPARMCD             | Trial Summary Parameter Short Name |
| TSPARM               | Trial Summary Parameter            |
| TSVAL                | Parameter Value                    |

**Note**

The following table enumerates the values in TSPARMCD and TSPARM variables

| <b>TSPARMCD</b> | <b>TSPARM</b>                        |
|-----------------|--------------------------------------|
| TITLE           | Trial Title                          |
| DESCR           | Trial Description                    |
| INDIC           | Trial Indication                     |
| TRT             | Investigational Therapy or Treatment |
| HYPOTHS         | Trial Hypotheses                     |
| SSTDTC          | Study Start Date                     |
| SENDTC          | Study End Date                       |
| PLANSUB         | Planned Number of Subjects           |
| ACTSUB          | Actual Number of Subjects            |
| AGEMAX          | Planned Maximum Age of Subjects      |
| AGEMIN          | Planned Minimum Age of Subjects      |
| AGEU            | Age Units                            |
| SEXPOP          | Sex of Participants                  |
| SPONSOR         | Clinical Study Sponsor               |
| PUBRLDAT        | Public Release Date                  |
| ISTRIAL         | Study Type                           |
| RESFOCUS        | Trial Research Focus                 |



---

|    |                                      |
|----|--------------------------------------|
| TV | <i>Trial Visits Domain Variables</i> |
|----|--------------------------------------|

---

**Description**

| Variable Name | Variable Label      |
|---------------|---------------------|
| STUDYID       | Study Identifier    |
| DOMAIN        | Domain Abbreviation |
| VISITNUM      | Visit Number        |
| VISIT         | Visit Name          |
| ARMCD         | Planned Arm Code    |
| ARM           | Name of Planned Arm |
| TVSTRL        | Visit Start Rule    |
| TVENRL        | Visit End Rule      |

---

|                    |                           |
|--------------------|---------------------------|
| Vital Signs Domain | <i>Vital Signs Domain</i> |
|--------------------|---------------------------|

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**Description**

The Vital Signs data of an ImmPort study is reformatted to the CDISC SDTM Vital Signs (VS) domain model, and is a list of 2 data frames containing 1) Vital Signs data [VS](#) and 2) any supplemental Vital Signs data [SUPPVS](#)

---

|    |                                     |
|----|-------------------------------------|
| VS | <i>Vital Signs Domain Variables</i> |
|----|-------------------------------------|

---

**Description**

| Variable Name | Variable Label                      |
|---------------|-------------------------------------|
| STUDYID       | Study Identifier                    |
| DOMAIN        | Domain Abbreviation                 |
| USUBJID       | Unique Subject Identifier           |
| VSSEQ         | Sequence Number                     |
| VSTEST        | Vital Signs Test Name               |
| VSCAT         | Category for Vital Signs            |
| VSORRES       | Result or Finding in Original Units |
| VSORRESU      | Original Units                      |
| VSLOC         | Location of Vital Signs Measurement |

|          |                          |
|----------|--------------------------|
| VISITNUM | Visit Number             |
| VISIT    | Visit Name               |
| VSDY     | Study Day of Vital Signs |

ZA

*Protein Quantification Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>                    |
|----------------------|------------------------------------------|
| STUDYID              | Study Identifier                         |
| DOMAIN               | Domain Abbreviation                      |
| USUBJID              | Unique Subject Identifier                |
| ZASEQ                | Sequence Number                          |
| ZATEST               | Protein Quantification Test Name         |
| ZACAT                | Category for Protein Quantification      |
| ZAMETHOD             | Measurement Technique                    |
| ZAANALYT             | Analyte                                  |
| ZAORRES              | Result or Finding in Original Units      |
| ZAORRESU             | Original Units                           |
| ZASPEC               | Specimen Type                            |
| VISITNUM             | Visit Number                             |
| VISIT                | Visit Name                               |
| ZAELTM               | Planned Elapsed Time from Time Point Ref |
| ZATPTREF             | Time Point Reference                     |
| ZAREFID              | Specimen Identifier                      |
| ZAXFN                | Raw Data File or Life Science Identifier |

ZB

*Cellular Quantification Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>     |
|----------------------|---------------------------|
| STUDYID              | Study Identifier          |
| DOMAIN               | Domain Abbreviation       |
| USUBJID              | Unique Subject Identifier |
| ZBSEQ                | Sequence Number           |

|          |                                          |
|----------|------------------------------------------|
| ZBTEST   | Cellular Quantification Test Name        |
| ZBCAT    | Category for Cellular Quantification     |
| ZBMETHOD | Measurement Technique                    |
| ZBPOPDEF | Cell Population Definition               |
| ZBPOPNAM | Cell Population Name                     |
| ZBORRES  | Result or Finding in Original Units      |
| ZBORRESU | Original Units                           |
| ZBBASPOP | Base Parent Population                   |
| ZBSPEC   | Specimen Type                            |
| VISITNUM | Visit Number                             |
| VISIT    | Visit Name                               |
| ZBELTM   | Planned Elapsed Time from Time Point Ref |
| ZBTPTREF | Time Point Reference                     |
| ZBREFID  | Specimen Identifier                      |
| ZBXFN    | Raw Data File or Life Science Identifier |

ZC

*Nucleic Acid Quantification Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>                    |
|----------------------|------------------------------------------|
| STUDYID              | Study Identifier                         |
| DOMAIN               | Domain Abbreviation                      |
| USUBJID              | Unique Subject Identifier                |
| ZCSEQ                | Sequence Number                          |
| ZCTEST               | Nucleic Acid Quantification Test Name    |
| ZCCAT                | Category for Nucleic Acid Quantification |
| ZCMETHOD             | Measurement Technique                    |
| ZCENTRZD             | Entrez Gene ID                           |
| ZCGENNAM             | Gene Name                                |
| ZCGENSYM             | Gene Symbol                              |
| ZCORRES              | Result or Finding in Original Units      |
| ZCORRESU             | Original Units                           |
| ZCSPEC               | Specimen Type                            |
| ZCREFID              | Specimen Identifier                      |
| VISITNUM             | Visit Number                             |
| VISIT                | Visit Name                               |
| ZCELT                | Planned Elapsed Time from Time Point Ref |
| ZCTPTREF             | Time Point Reference                     |

ZD

*Titer Assay Results Domain Variables***Description**

| <b>Variable Name</b> | <b>Variable Label</b>                    |
|----------------------|------------------------------------------|
| STUDYID              | Study Identifier                         |
| DOMAIN               | Domain Abbreviation                      |
| USUBJID              | Unique Subject Identifier                |
| ZDSEQ                | Sequence Number                          |
| ZDTEST               | Titer Assay Results Test Name            |
| ZDCAT                | Category for Titer Assay Results         |
| ZDMETHOD             | Measurement Technique                    |
| ZDSTRAIN             | Virus Strain                             |
| ZDORRES              | Result or Finding in Original Units      |
| ZDORRESU             | Original Units                           |
| ZDSPEC               | Specimen Type                            |
| ZDREFID              | Specimen Identifier                      |
| VISITNUM             | Visit Number                             |
| VISIT                | Visit Name                               |
| ZDELTM               | Planned Elapsed Time from Time Point Ref |
| ZDTPTRF              | Time Point Reference                     |
| ZDXFN                | Raw Data File or Life Science Identifier |

# Index

Adverse Events Domain, [3](#)  
AE, [3](#), [4](#), [8](#)  
APMH, [4](#), [5](#), [8](#)  
Associated Persons Medical History Domain, [5](#)  
  
buildNewSqliteDatabase, [5](#)  
  
Cellular Quantification Domain, [6](#)  
CM, [6](#), [6](#), [17](#)  
Concomitant Medications Domain, [6](#)  
  
Demographics Domain, [7](#)  
DM, [7](#), [7](#), [26](#)  
DV, [7](#), [8](#), [23](#)  
  
Events, [27](#)  
Events (Events-class), [8](#)  
Events-class, [8](#)  
EX, [9](#), [9](#), [17](#)  
Exposure Domain, [9](#)  
  
FA, [10](#), [10](#), [11](#)  
Findings, [27](#)  
Findings (Findings-class), [10](#)  
Findings About Domain, [10](#)  
Findings-class, [10](#)  
  
Genetics Findings Domain, [11](#)  
getAssayDataOfStudies, [12](#)  
getDomainCode, [13](#)  
getDomainDataOfStudies, [13](#)  
getListOfAssayTypes, [14](#)  
getListOfDomains, [14](#)  
getListOfStudies, [15](#)  
getStudiesWithSpecificAssayData, [15](#)  
getStudiesWithSpecificDomainData, [16](#)  
getStudy, [17](#)  
  
Interventions, [27](#)  
Interventions (Interventions-class), [17](#)  
  
Interventions-class, [17](#)  
  
Laboratory Test Results Domain, [18](#)  
LB, [11](#), [18](#), [18](#)  
loadSerializedStudyData, [19](#)  
  
Medical History Domain, [19](#)  
mergeDomainAndSupplemental, [20](#)  
MH, [8](#), [19](#), [20](#)  
  
Nucleic Acid Quantification Domain, [21](#)  
  
PE, [11](#), [21](#), [22](#)  
PF, [11](#), [22](#)  
Physical Examination Domain, [22](#)  
Protein Quantification Domain, [23](#)  
Protocol Deviations Domain, [23](#)  
  
QS, [11](#), [23](#), [24](#)  
Questionnaires Domain, [24](#)  
  
RImmPort, [24](#)  
RImmPort-package (RImmPort), [24](#)  
  
serializeStudyData, [24](#)  
setImmPortDataSource, [25](#)  
Skin Response Domain, [26](#)  
SpecialPurpose, [27](#)  
SpecialPurpose (SpecialPurpose-class), [26](#)  
SpecialPurpose-class, [26](#)  
SR, [11](#), [26](#), [26](#)  
Study (Study-class), [27](#)  
Study-class, [27](#)  
SU, [17](#), [28](#), [28](#)  
Subject Visits Domain, [28](#)  
Substance Use Domain, [28](#)  
SUPP, [3](#), [5-9](#), [11](#), [17](#), [21](#), [23](#), [24](#), [26](#), [28](#), [29](#), [38](#), [39](#)  
SUPPDV, [8](#), [23](#), [29](#)  
SUPPFA, [10](#), [11](#), [30](#)

SUPPLB, [11](#), [18](#), [30](#)  
SUPPMH, [8](#), [19](#), [31](#)  
SUPPPE, [11](#), [22](#), [32](#)  
SUPPPF, [11](#), [32](#)  
SUPPVS, [11](#), [33](#), [41](#)  
SUPPZA, [11](#), [34](#)  
SUPPZB, [34](#)  
SUPPZC, [35](#)  
SUPPZD, [36](#)  
SV, [28](#), [37](#)  
  
TA, [37](#), [38](#), [39](#)  
TI, [38](#), [38](#), [39](#)  
Titer Assay Results Domain, [38](#)  
Trial Arms Domain, [38](#)  
Trial Inclusion Exclusion Criteria  
Domain, [38](#)  
Trial Summary Domain, [39](#)  
Trial Visits Domain, [39](#)  
TrialDesign, [27](#)  
TrialDesign (TrialDesign-class), [39](#)  
TrialDesign-class, [39](#)  
TS, [39](#), [40](#)  
TV, [39](#), [41](#)  
  
Vital Signs Domain, [41](#)  
VS, [11](#), [41](#), [41](#)  
  
ZA, [11](#), [23](#), [42](#)  
ZB, [6](#), [11](#), [42](#)  
ZC, [11](#), [21](#), [43](#)  
ZD, [11](#), [38](#), [44](#)