

# Introducing the MMRRC ICSC API

## v1.1

### General description

The MMRRC ICSC API is a tool for the general public as well as MMRRC centers to use for programmatically interacting with the MMRRC catalog. The API will contain functions to query the catalog for individual products, the entire catalog, or to submit and edit catalog entries from MMRRC and affiliated centers.

One of the primary uses for the API is to allow KOMP production centers to programmatically submit their production data directly into the MMRRC and speed up the curation and approval process of new strains produced as part of the KOMP2 Phase 2 effort.

**API Framework Details:** This RESTful API was built using the PHP micro MVC framework [SILEX](#) and interacts by producing and consuming objects in the JSON lightweight data interchange format. Examples of the specific functions, their usage, and the JSON formats produced and expected are detailed below.

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### Functions and usage

#### Sandbox access

We have made a sandbox available for developers to test their implementation of this API at [apisandbox.mmrrc.org](http://apisandbox.mmrrc.org).

#### Conventions

Text annotations for strain names are stored as Unicode characters.

#### Endpoints

Endpoints are categorized into three groups based on the HTTP verb used to make a successful request: GET, POST and PUT.

GET endpoint functions are used for data retrieval.

POST endpoint is used to create a new submission.

PUT endpoint will be used to edit a submission already existing in the system.

GET endpoint functions are public and do not require authorization. POST and PUT requests are private and accessible only on successful authorization. Refer to 'Authorization' for more information.

## Endpoints

URI	HTTP verb	Description
/api/v1/catalog/{function}/{argument}	GET	JSON output of all catalog items/submissions
api/v1/submission/	POST	Create a new submission
api/v1/submission/{mmrrc_id}	PUT*	Edit fields for a specific submission
api/v1/orders/{function}/{order_id}	GET	JSON output of a specified order or all orders.
api/v1/orders/{function}	POST, PUT	Add/Edit order information.

\* Editing submissions via the API is not available yet. To edit your submission, please use the frontend mechanism available at [www.mmrrc.org](http://www.mmrrc.org).

## Authorization

POST and PUT requests are authorized via the *x-api-key* HTTP header. Every such request should contain an *x-api-key* HTTP header with a unique API key as its value. API keys are associated with individual API users (centers) and can be obtained from [service@mmrrc.org](mailto:service@mmrrc.org).

To quickly check if an API key is valid, the following cURL command can be used.

```
$ curl --header "x-api-key: eceab44fdb2d86fx" -X POST --data-binary '{"sample":"value"}' http://api.mmrrc.org/api/v1/submission
```

If the *x-api-key* value is incorrect or missing, the API returns the following error message:

```
{
  "failure": {
    "errors": [
      "Your 'x-api-key' header value is incorrect or empty."
    ]
  }
}
```

**Word of caution:** Do not utilize client-side technologies (JavaScript, AJAX) to access the API as this will expose your private API key to the public. Use server-side technologies such as Python, PHP or Perl instead.

## Error reporting

The API uses descriptive human-readable error messages for troubleshooting. An example errors object:

```
{
  "failure": {
    "errors": [
      "An entry with a strain name _C57BL/6J-A_13_ already exists."
    ]
  }
}
```

## List of functions (GET)

### getCatalog(*page\_number*)

This function retrieves the entire catalog in JSON format. The response is paginated, i.e. a single request will return 100 catalog entries starting at *page\_number*.

**Endpoint:** /api/v1/catalog/getCatalog/

**Example request (GET):** <https://api.mmrrc.org/api/v1/catalog/getCatalog/400>

**Example response:**

```
[{"mmrrc_id":"4238","strain_name":"BayGenomics ES cell line RRP204","status":"Accepted","accepted_dt":"2004-06-26","delayed_release_requested":"0","published_name":"","is_transgenic":"","is_sexlinked":"","genetic_alteration":"","phenotype":"","strain_development":"","availability_level":"","center_id":"UCD","assigned_dt":"2004-06-26","availability":"ES cell line","locus":""}, ..]
```

### getCatalogEntry(*mmrrc\_id*)

This function returns a single catalog entry by *mmrrc\_id*.

**Endpoint:** /api/v1/catalog/getCatalogEntry/

**Example request (GET):** <https://api.mmrrc.org/api/v1/catalog/getCatalogEntry/44>

**Example response:**

```
{"mmrrc_id":"44","strain_name":"B6;129-\u003Ci\u003EAmelx\u003Csup\u003Etm1Kul\u003C\/sup\u003E\u003E\u003C\/i\u003E\u003E\u003E\/Mmnc","status":"Accepted","accepted_dt":"2002-02-26","delayed_release_requested":"0","published_name":"","is_transgenic":"No","is_sexlinked":"No","genetic_alteration":"A neo cassette was inserted in exon 2 of the target gene.","phenotype":"Abnormal teeth with chaulky-white discoloration, attrition of cuspal tips associated with enamel hypoplasia.","strain_development":"R1 ES cells were injected into C57BL\u002F6 blastocysts. Resulting chimeric males were backcrossed to C57BL\u002F6 females to generate heterozygotes, siblings of which were inbred to develop homozygous animals.","availability_level":"","center_id":"UNC","assigned_dt":"2002-02-26","availability":"Cryo-archive","locus":[{"mmrrc_id":"44","symbol":"Amelx\u003Ctm1Kul\u003E","segment_type":"Allele","species":"Mouse","locus_id":"6","locus_role":"Target"}, {"mmrrc_id":"44","symbol":"Amelx","segment_type":"Gene","species":"Mouse","locus_id":"5","locus_role":"Target"}]}
```

### getStrain(*mmrrc\_id*)

This function retrieves strain information by *mmrrc\_id*.

**Endpoint:** /api/v1/catalog/getStrain/

**Example request (GET):** <https://api.mmrrc.org/api/v1/catalog/getStrain/67>

**Example response:**

```
{"mmrrc_id":"67","strain_name":"FVB\u002FN-Tg(Myh7-Pln)2Egk\u002FMMmh","nomen_sanctioned":"1","mgi_acc_id":"MGI:2665588","accepted_dt":"2002-06-18","delayed_release_dt":"","mta_version":"1","mta_rcvd_dt":"2002-07-
```

```

22", "mta_release_category": "B", "initial_maintenance_level": "Cryo-
archive", "historical_dev_desc": "", "originated_on": "", "nomen_notes": "Changed
name from \u0027FVB-Tg(Pln)2Egk\u0027 to match MGI sfr 4-27-2009; Modified to
Myh7 rather than Myh6 since submission indicates beta-
MHC.rsa10222014", "maintained_on": "", "is_di_protocol_onfile": "1", "is_profile_onf
ile": "1", "hide_related_products": "N", "other_notes": "Previously assigned to
Taconic. Non-Profit Only marked due to donor selecting option B (available in
an early MTA version). Requestors from for-profits institutes will need to sign
an agreement with the donor\u0027s institution before obtaining material from
the MMRRC. \r\n\r\nThis strain is not published", "created_dt": "2002-06-
18", "created_by": "MMRRCDBA", "mod_dt": "2016-03-30
12:25:06", "mod_by": "etpage@ucdavis.edu", "strain_type_id": "15", "submission_type"
: "Type-1", "status": "Accepted", "nomen_chng_dt": "", "avd_level": "Cryo-
archive", "source_collection": "", "delayed_release_extns": "0", "delayed_release_re
quested": "0", "publication_provided": "0", "donor_requested_delay": "0", "create_dt"
: "", "create_by": "0"}

```

## getSDS(mmrrc\_id)

This function retrieves all the data found on the Strain Detail Sheet for a single ID.

**Endpoint:** /api/v1/catalog/getSDS/

**Example request (GET):** <https://api.mmrrc.org/api/v1/catalog/getSDS/67>

**Example response:**

```

{"mmrrc_id": "67", "doc_title": "\u003Ctitle\u003EMMRRC:000067-MU Detail
Page\u003C\/title\u003E", "published_name": "", "genetic_alteration": "Transgene", "
genotyping": "\u003Cul\u003E\u003Cli\u003E\u003Ca href=\u0022http:\/\/www.mu-
mmrrc.com\/search_protocols\/download.php?x=77\u0022
target=\u0022_blank\u0022\u003EGenotyping
Protocol(s)\u003C\/a\u003E\u003C\/li\u003E\u003Cli\u003ECenter protocol and
contact for technical support will be shipped with
mice.\u003C\/li\u003E\u003C\/ul\u003E", "es_cell_line": "", "phenotype": "Overexpre
ssion of phospholamban was expressed in mouse slow-twitch skeletal muscle which
resulted in muscle atrophy and slow rates of contraction and relaxation of the
soleus
muscle.", "founder_background": "FVB\/N", "current_background": "FVB\/N", "strain_de
velopment": " ", "research_applications": "\u003Cli\u003ESkeletal muscle
contraction\n
\u003C\/li\u003E\n
\u003Cli\u003E\n
Calcium
cycling\u003C\/li\u003E", "donor_institution": "Dr. Evangelia Kranias, University
of Cincinnati, College of
Medicine", "reference": "", "coat_color": "White", "other_appearance": "", "breeding_s
ystem": "Backcross \/ Sib
mating", "breeding_schemes": "\u003Cul\u003E\u003Cli\u003EFVB\/NTac female x
Hemizyous Tg male\u003C\/li\u003E\u003Cli\u003E
Hemizygous Tg (female or
male) x Wildtype
littermate\u003C\/li\u003E\u003C\/ul\u003E", "generation": "Unknown", "breeding_pe
rformance": "Good", "reproductive_statistics": "\u003Ctr\u003E\n
\u003Ctd
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\u003Ctd align=\u0022center\u0022\u003EUnknown \u003C\/td\u003E\n
\u003Ctd align=\u0022center\u0022\u003EUnknown \u003C\/td\u003E\n
\u003Ctr\u003E\n
\u003Ctr\u003E\n
\u003Ctd
align=\u0022right\u0022\u003EHomozygotes are fertile:\u003C\/td\u003E\n
\u003Ctd align=\u0022center\u0022\u003EUnknown \u003C\/td\u003E\n
\u003Ctd align=\u0022center\u0022\u003EUnknown \u003C\/td\u003E\n
\u003Ctr\u003E\n
\u003Ctr\u003E\n
\u003Ctd
align=\u0022right\u0022\u003EHeterozygotes (Tg) are fertile:\u003C\/td\u003E\n
\u003Ctd align=\u0022center\u0022\u003EYes \u003C\/td\u003E\n
\u003Ctd
align=\u0022center\u0022\u003EYes \u003C\/td\u003E\n
\u003Ctr\u003E\n
\u003Ctr\u003E\n
\u003Ctd

```

```

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\u003C\/tr\u003E", "ave_pups_born": "8", "wean_age": "3
weeks", "special_husbandry": "", "available_control": "\u003Cul\u003E\u003Cli\u003E
\n\t Wildtype littermates\u003C\/li\u003E\u003Cli\u003E\n\t
FVB\/N\u003C\/li\u003E\u003C\/ul\u003E", "parent_cell_line": "", "background_strai
n": "", "culture_protocol": "", "health_status_cryo": "\u003Ca
href=\u0022http:\/\/www.mu-
mmrrc.com\/Policies_Procedures\/Health_Monitoring\/\u0022
target=\u0022blank\u0022\u003EColony\u0026nbsp;Surveillance\u0026nbsp;Program
and Current Health
Reports\u003C\/a\u003E", "availability_level": "", "hide_colony_husbandry_info": "N
", "phenotype_list": "
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\u003Cbr\u003E\u003Cstrong\u003EMammalian Phenotype
Terms:\u003C\/strong\u003E\u003Cspan style=\u0027font-size:75%; font-weight:
normal; color:#888; text-align:right; margin-left:5em;\u0027\u003E(provided by
\u003Ca
href=\u0027http:\/\/informatics.jax.org\u0027\u003EMGI\u003C\/a\u003E)\u003C\/s
pan\u003E\u0026nbsp; \u0026nbsp; \u0026nbsp; \u003Ca
onclick=\u0022toggle_all();\u0022\u003E\u003Cimg
src=\u0022\/images\/jaxmice_icon_max.gif\u0022 id=\u0022all_img\u0022
border=\u00220\u0022 alt=\u0022\u0022\u003E\u003C\/a\u003E\u003Cspan
id=\u0022all_text\u0022 style=\u0022margin-
left:5px\u0022\u003EExtend\u003C\/span\u003E all MPTs\u003Cbr\u003E\u0026nbsp;
\u0026nbsp; \u0026nbsp; assigned by genotype \u003Cch5\u003ETg (Myh6-
Pln)2Egk\/?\u003C\/h5\u003E \u0026nbsp; \u0026nbsp; \u0026nbsp; \u0026nbsp;
FVB\/N-Tg (Myh6-Pln)2Egk \u003Cul class=\u0022mpt\u0022\u003E \u003Cli
id=\u0022mpt_2199\u0022\u003E\u003Ca
onclick=\u0022toggle_in_sds(\u0027mpt_2199\u0027)\u0022\u003E\u003Cimg
src=\u0022\/images\/jaxmice_icon_max.gif\u0022 id=\u0022img_mpt_2199\u0022
name=\u0022collapsible\u0022 border=\u00220\u0022
alt=\u0022\u0022\u003E\u003C\/a\u003E\u003Cb\u003Emuscle
phenotype\u003C\/b\u003E \u003Cul id=\u0022ul_mpt_2199\u0022
class=\u0022closed\u0022\u003E \u003Cli
class=\u0022mpt\u0022\u003Eimpaired skeletal muscle contractility (MGI Ref ID
\u003Ca
href=\u0022http:\/\/www.informatics.jax.org\/searches\/reference.cgi?95068\u002
2\u003EJ:94077\u003C\/a\u003E) \u003Cul\u003E
\u003Cli class=\u0022mptcirc\u0022\u003Esoleus muscle exhibits slow rates of
contraction and relaxation \u003C\/li\u003E \u003C\/ul\u003E
\u003C\/li\u003E \u003Cli class=\u0022mpt\u0022\u003Eskelatal
muscle atrophy (MGI Ref ID \u003Ca
href=\u0022http:\/\/www.informatics.jax.org\/searches\/reference.cgi?95068\u002
2\u003EJ:94077\u003C\/a\u003E) \u003C\/li\u003E
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", "f_hom_viable": "", "m_hom_viable": "", "f_hom_fertile": "", "m_hom_fertile": "", "f_
age_repdec": "", "m_age_repdec": "", "update_dt": "2016-05-25
10:54:58", "user_id": "11975", "is_transgenic": "", "is_sexlinked": "", "public_displa
y": "Yes", "public_display_dt": "2011-11-
16", "show_repro_stat": "No", "breeding_comment": "", "sds_status": "Complete", "hom_v
iable_comment": "", "hom_fertile_comment": "", "het_hemi_fertile_comment": "", "f_het
_hemi_fertile": "", "m_het_hemi_fertile": "", "protocol_status": "Needs
Protocol", "donor_notes": "", "edit_notes": "", "mammalian_phenotype_id": "", "sbm_gen
e_symbol": "", "sbm_allele_pairs": "", "sbm_additional_allele_info": "", "esc_please_
see_also": "", "esc_cell_development": "", "created_dt": ""}

```

## getAllOrders()

This function retrieves all orders for the center associated with an API user making this request.

**Endpoint:** /api/v1/orders/ getAllOrders/

**Example request (GET):** <https://api.mmrrc.org/api/v1/orders/getAllOrders>

**Example response:**

```
[{ "mmrrc_order_oid": "7845472", "actual_ship_dt": "2007-03-05",
"billing_acct": "", "billing_id": "", "billing_subacct": "", "center_id":
"UCD", "center_order_id": "", "center_ping_dt": "", "completed_by_email": "",
"completed_by_name": "", "completed_by_title": "", "estd_ship_dt": "",
"fedex_acct_num_tx": "", "init_estd_ship_dt": "", "instructions_comments_tx":
"2\16\07 request date", "is_for_nih_grant": "0", "is_hlth_stat_preship_reqd":
"0",...}]
```

## getOrderDetails(*order\_id*)

This function retrieves order information by *order\_id*. The requester can only access orders of their center.

**Endpoint:** /api/v1/orders/ getOrderDetails/

**Example request (GET):** <https://api.mmrrc.org/api/v1/orders/getOrderDetails/7827472>

**Example response:**

```
{ "order_info": { "mmrrc_order_oid": "7827472", "actual_ship_dt": "2007-03-05",
"billing_acct": "", "billing_id": "", "billing_subacct": "", "center_id":
"UCD", "center_order_id": "", "center_ping_dt": "", "completed_by_email": "",
"completed_by_name": "", "completed_by_title": "", "estd_ship_dt": "",
"fedex_acct_num_tx": "", "init_estd_ship_dt": "", "instructions_comments_tx":
"2/16/07 request date", "is_for_nih_grant": "0", "is_hlth_stat_preship_reqd":
"0", "is_paying_credit_card": "0", "is_ri_planning_make_mice": "1",
"po_expiration_dt": "", "po_num_tx": "726135", "proj_code": "",
"icc_center_oid": "", "order_submission_oid": "7827461", "state_id": "3206",
"lockedbysession_id": "", "create_by": "6879", "create_dt": "2007-06-06",
"mod_by": "267447", "mod_dt": "2010-10-17", "order_dt": "2007-02-16",
"preferred_carrier_acct": "", "preferred_carrier_tx": "", "customer_class_cd":
"NP", "preferred_pay_method": "PO", "completed_by_phone": "",
"ip_responsible_role_tx": "Bill-to", "other_emails": "", "customer_label": "",
"grant_numbers": "", "center_accept_dt": "", "waive_quarantine": "",
"nih_sources": "", "state_cd": "Fulfilled" }, "contacts": [ { "role_cd": "Bill-
to", "order_contact_oid": "7847476", "distribution_contact_oid": "28429588",
"brim_user_id": "", "email_address": "caroline@example.com", "fax": "254-618-
1420", "first_name": "Caroline ", "is_active": "1", "last_name": "Smith",
"name_suffix": "", "title": "", "voice_phone": "456-634-1134", "create_by":
"267447", "create_dt": "2010-10-17", "mod_by": "", "mod_dt": "",
"distrib_cont_instn_oid": "28449589", "institution_oid": "28449587",
"state_province": "TX", "postal_code": "76235-5303", "country": "United
States", "city": "Dallas ", "address": "6000 Oak Street", "address_detail": "",
"institution_name": "University of Texas" }, { "role_cd": "Recipient",
"order_contact_oid": "7847477", "distribution_contact_oid": "28429588",
"brim_user_id": "", "email_address": "caroline@example.com", "fax": "254-618-
1420", "first_name": "Caroline ", "is_active": "1", "last_name": "Smith",
"name_suffix": "", "title": "", "voice_phone": "456-634-1134", "create_by":
"267447", "create_dt": "2010-10-17", "mod_by": "", "mod_dt": "",
"distrib_cont_instn_oid": "28449589", "institution_oid": "28449587",
"state_province": "TX", "postal_code": "76235-5303", "country": "United
States", "city": "Dallas ", "address": "6000 Oak Street", "address_detail": "",
"institution_name": "University of Texas" }, { "role_cd": "Ship-to",
```

```
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"", "email_address": "", "fax": "", "first_name": "", "is_active": "",
"last_name": "", "name_suffix": "", "title": "", "voice_phone": "",
"create_by": "", "create_dt": "", "mod_by": "", "mod_dt": "",
"distrib_cont_instn_oid": "", "institution_oid": "", "state_province": "TX",
"postal_code": "76235-5303", "country": "United States", "city": "Dallas",
"address": "6000 Oak Street", "address_detail": "", "institution_name": "" }, {
"role_cd": "Ship-to Contact", "order_contact_oid": "7847477",
"distribution_contact_oid": "28429588", "brim_user_id": "", "email_address":
"caroline@example.com", "fax": "254-618-1420", "first_name": "Caroline",
"is_active": "1", "last_name": "Smith", "name_suffix": "", "title": "",
"voice_phone": "456-634-1134", "create_by": "267447", "create_dt": "2010-10-
17", "mod_by": "", "mod_dt": "", "distrib_cont_instn_oid": "28449589",
"institution_oid": "28449587", "state_province": "TX", "postal_code": "76235-
5303", "country": "United States", "city": "Dallas", "address": "6000 Oak
Street", "address_detail": "", "institution_name": "University of Texas" }, {
"role_cd": "Vet", "order_contact_oid": "7827482", "distribution_contact_oid":
"", "brim_user_id": "", "email_address": "", "fax": "", "first_name": "",
"is_active": "", "last_name": "", "name_suffix": "", "title": "",
"voice_phone": "", "create_by": "", "create_dt": "", "mod_by": "", "mod_dt":
"", "distrib_cont_instn_oid": "", "institution_oid": "", "state_province": "",
"postal_code": "", "country": "", "city": "", "address": "", "address_detail":
"", "institution_name": "" } ], "restrictions": [ {
"order_strain_restriction_oid": "7827487", "closed_dt": "2007-06-06",
"fulfillment_notes": "", "mmrrc_id": "2245", "restriction_id": "1",
"status_dt": "2007-06-06", "status_initials": "", "status_notes": "BG clone,
not required", "status_user": "jdoe", "icc_restriction_oid": "",
"icc_strain_oid": "", "mmrrc_order_oid": "7827472", "mta_on_file_oid": "",
"status_cd": "N/A", "create_by": "267851", "create_dt": "2007-06-06", "mod_by":
"270818", "mod_dt": "2007-08-22", "restriction_name": "Non-Profit
Only<sup>1</sup>", "is_patent": "0", "restriction_desc": "The donor or their
institution limits the distribution to non-profit institutions only.",
"expiration_dt": "", "nonprofit_only": "1", "reqd_of_nonprofit": "0", "holder":
"", "contact": "Contact Donating Institution", "terms": "", "is_standard": "1",
"show_publicly": "1", "is_mta": "0", "url": "", "strain_name": "BayGenomics ES
cell line RRF531" } ], "items": [ { "order_item_oid": "7827483", "is_active":
"1", "item_price": "225", "item_status_cd": "Active", "needed_by_dt": "",
"qty": "1", "item_master_oid": "7663313", "mmrrc_order_oid": "7827472",
"order_item_rfk": "", "create_by": "267447", "create_dt": "2007-05-29",
"mod_by": "267447", "mod_dt": "2010-02-21", "age_desc": "", "alt_item_code":
"RRF531", "ctr_item_code": "", "gender": "", "icc_item_code": "002245-UCD-
CELL", "is_available": "1", "item_desc": "BayGenomics ES cell line RRF531",
"product_note_oid": "", "strain_archive_oid": "7663312", "material_format": "ES
cell line", "fulfillment_time_tx": "Typically 2 to 4 weeks with additional
weeks for any additionally requested services", "item_mstr_fee_category_oid":
"10974224", "strain_name": "BayGenomics ES cell line RRF531", "mmrrc_id":
"2245", "standard_uom": "Vial", "close_status": "AVD", "specs": [ {
"order_item_spec_optn_oid": "7827484", "desc_tx": "ES cell line genetic
confirmation", "price": "0", "value_tx": "No", "item_spec_oid": "7340132",
"order_item_oid": "7827483", "create_by": "", "create_dt": "", "mod_by":
"267447", "mod_dt": "2011-03-30", "center_id": "UCD", "html_display_type":
"select", "icc_center_oid": "", "product_note_oid": "", "applies_to_format":
"Cell Line", "spec_type": "Resequencing", "item_spec_fee_category_oid":
"10974454", "icc_item_code_fk": "" }, { "order_item_spec_optn_oid": "7827485",
"desc_tx": "Micro-Injection Service", "price": "0", "value_tx": "No",
"item_spec_oid": "7340133", "order_item_oid": "7827483", "create_by": "",
"create_dt": "", "mod_by": "267447", "mod_dt": "2010-02-21", "center_id":
"UCD", "html_display_type": "select", "icc_center_oid": "", "product_note_oid":
"", "applies_to_format": "Cell Line", "spec_type": "MicroInjection",
"item_spec_fee_category_oid": "10974451", "icc_item_code_fk": "" }, {
"order_item_spec_optn_oid": "7827486", "desc_tx": "Parental line E14Tg2a.4 <a
href=\"/catalog/getSDS.jsp?mmrrc_id=15890\"
target=\"_blank\">(MMRRC:015890)</a>", "price": "0", "value_tx": "No",
```

```

"item_spec_oid": "7506651", "order_item_oid": "7827483", "create_by": "267447",
"create_dt": "2007-04-10", "mod_by": "267447", "mod_dt": "2010-02-21",
"center_id": "UCD", "html_display_type": "select", "icc_center_oid": "",
"product_note_oid": "", "applies_to_format": "Cell Line", "spec_type":
"Parental", "item_spec_fee_category_oid": "10974452", "icc_item_code_fk": "" }
] } ], "shipments": [ { "item_master_oid": "7663313", "age_desc": "",
"alt_item_code": "RRF531", "ctr_item_code": "", "gender": "", "icc_item_code":
"002245-UCD-CELL", "is_available": "1", "item_desc": "BayGenomics ES cell line
RRF531", "product_note_oid": "", "strain_archive_oid": "7663312", "create_by":
"267447", "create_dt": "2007-05-29", "mod_by": "267447", "mod_dt": "2010-02-
21", "material_format": "ES cell line", "fulfillment_time_tx": "Typically 2 to
4 weeks with additional weeks for any additionally requested services",
"item_mstr_fee_category_oid": "10974224", "qty": "1", "partial_ship_dt": "2007-
03-05", "shipped_item_oid": "8127254", "note_tx": "" } ], "milestones": "",
"notes": [ { "order_note_oid": "7827488", "note_dt": "2007-06-06", "note_tx":
"2/16/07 request date", "note_type_cd": "Customer Submission", "user_id": "",
"mmrrc_order_oid": "7827472", "create_by": "267851", "create_dt": "2007-06-06",
"mod_by": "", "mod_dt": "", "Name": "" } ], "funding": "", "nonprofit_status":
"NP", "customer_label": "", "grant_numbers": "" }

```

---

## List of functions (POST)

### addOrderNote()

This function adds a user note to an order.

**Endpoint:** /api/v1/orders/addOrderNote

**Example request (POST):** <https://api.mmrrc.org/api/v1/orders/addOrderNote>

**Example JSON input:**

```

{
  "order_id": "146694018",
  "note": "This is note text."
}

```

**Example response:**

```

{
  "success": "Note Successfully added to 146694018"
}

```

---

### addOrderMilestone()

This function adds a milestone to an order.

**Endpoint:** /api/v1/orders/addOrderMilestone

**Example request (POST):** <https://api.mmrrc.org/api/v1/orders/addOrderMilestone>

**Example JSON input:**

```

{
  "order_id": "146694018",
  "milestone": "Colony expansion started",
  "completed_dt": "2017-03-28",
  "note": "This is note text."
}

```

**Example response:**



```
{
  "success": "Milestone Successfully added to 146694018"
}
```

---

### addOrderShipment()

This function adds an order shipment.

**Endpoint:** /api/v1/orders/addOrderShipment

**Example request (POST):** <https://api.mmrrc.org/api/v1/orders/addOrderShipment>

#### Example JSON input:

```
{
  "order_id": "146694018",
  "item_code": "042212-UCD-HET-M",
  "note": "Shipping might come in early.",
  "ship_dt": "2017-03-07",
  "qty": "1125"
}
```

#### Example response:

```
{
  "success": "Shipment successfully added to order 146694018"
}
```

---

### updateOrderStatus()

This function updates order status.

**Endpoint:** /api/v1/orders/updateOrderStatus

**Example request (POST):** <https://api.mmrrc.org/api/v1/orders/updateOrderStatus>

#### Example JSON input:

```
{
  "order_id": "146694018",
  "state_id": "3201"
}
```

#### Example response:

```
{
  "success": "Order Status Updated Successfully to 3200"
}
```

---

## Creating a new submission (POST)

Note: accessing this resource requires authentication.

**Description:** This resource enters a strain submission into the curation process and returns *mmrrc\_id*.

**Endpoint:** /api/v1/submission/

**Example request (POST):** <https://api.mmrrc.org/api/v1/submission/>

**Example response:**

```
{
  "success": {
    "mmrrc_id": "42047"
  }
}
```

### Example JSON input (only required fields)

The following fields are required for basic curation of the strain getting submitted and are required for all submissions.

```
{
  "donor_info":
  {
    "strain_contacts":
    {
      "donor_contact":
      {
        "first_name": "Marshall Anderson",
        "last_name": "Young",
        "institution": "UC Davis",
        "email_address": "mayoung@example.com",
        "phone": "(916) 555-5555",
        "postal_address": "900 Fake St., APT 10",
        "city": "Woodland",
        "state_province": "CA",
        "country": "USA",
        "title": "Mr.",
        "prefix": "Dr.",
        "suffix": "M.D."
      },
      "correspondence_contact":
      {
        "first_name": "Marshall Anderson",
        "last_name": "Young",
        "institution": "UC Davis",
        "email_address": "mayoung@example.com",
        "phone": "(916) 555-5555",
        "postal_address": "900 Fake St., APT 10",
        "city": "Woodland",
        "state_province": "CA",
        "country": "USA",
        "title": "Mr.",
        "prefix": "Dr.",
        "suffix": "M.D."
      },
      "transfer_contact":
      {
        "first_name": "Marshall Anderson",
        "last_name": "Young",
        "institution": "UC Davis",
        "email_address": "mayoung@example.com",
        "phone": "(916) 555-5555",
        "postal_address": "900 Fake St., APT 10",
        "city": "Woodland",
        "state_province": "CA",
        "country": "USA",
        "title": "Mr.",
        "prefix": "Dr.",
        "suffix": "M.D."
      }
    }
  }
}
```

```
    }
  },
  "strain_data":
  {
    "strain_name": "C57BL/6JA_13",
    "status": "Assign",
    "submission_type": "Type-2/NIDDK",
    "accepted_dt": "2016-02-23",
    "delayed_release_dt": "2017-06-21",
    "strain_type_id": "Congenic",
    "delayed_release_requested": "0",
    "publication_provided": "1",
    "originated_on": "12",
    "maintained_on": "22",
    "mta_rcvd_dt": "2016-02-02",
    "mta_release_category": "Category 5",
    "mta_version": "16.04.01"
  },
  "strain_detail":
  {
    "published_name": "not-wild mice",
    "is_transgenic": "No",
    "is_sexlinked": "Yes",
    "genetic_alteration": "Clone Control",
    "phenotype": "Normal",
    "genotyping": "Unexpressive",
    "reference": "No References Required",
    "strain_development": "Mutant Selection and Recombination",
    "current_background": "No Protocol",
    "available_control": "CCDBA/S-1124",
    "research_applications": "No Research Application",
    "coat_color": "Black",
    "other_appearance": "White coloring on feet and ear tips",
    "breeding_system": "Sib-mating",
    "breeding_schemes": "Cross",
    "breeding_performance": "Undetermined",
    "f_hom_viable": "Yes",
    "m_hom_viable": "N/A",
    "f_hom_fertile": "N/A",
    "m_hom_fertile": "N/A",
    "f_het_hemi_fertile": "Reduced",
    "m_het_hemi_fertile": "N/A",
    "f_age_repdec": "10 weeks",
    "m_age_repdec": "N/A",
    "ave_pups_born": "0",
    "wean_age": "N/A",
    "special_husbandry": "None",
    "hide_colony_husbandry_info": "Yes",
    "show_repro_stat": "Yes",
    "sds_status": "QC",
    "protocol_status": "Center Protocol",
    "public_display": "No",
    "generation": "1",
    "hom_viable_comment": "No Comment to write here.",
    "het_hemi_fertile_comment": "No",
    "health_status_cryo": "Done"
  },
  "locus_data":
  {
    "items":
    [
      {
        "symbol": "NONE",
```

```

    "markup_symbol": "MARKUP011",
    "resource_id": "03",
    "mgi_acc_id": "18644750",
    "external_acc_id": "18644750-00185",
    "name": "Rattatouie",
    "species": "Mus Musculus",
    "chromosome": "XX",
    "alteration_desc": "A type-string field.",
    "alteration_id": "Chromosomal Aberration",
    "locus_role": "Inducer",
    "cell_line_id": "v6.5"
  },
  {
    "symbol": "NONE",
    "markup_symbol": "MARKUP011",
    "resource_id": "03",
    "mgi_acc_id": "18644750",
    "external_acc_id": "18644750-00185",
    "name": "Rattatouie",
    "species": "Mus Musculus",
    "chromosome": "XX",
    "alteration_desc": "A type-string field.",
    "alteration_id": "Duplication",
    "locus_role": "Inducer"
  }
]
},
"importation_data":
{
  "center_id": "JAX",
  "assigned_dt": "2016-02-05",
  "closed_dt": "2016-11-21",
  "mice_rcvd_dt": "2016-03-15",
  "availability": "ES cell line",
  "germplasm_received": "yes",
  "estimated_avd_dt": "2016-09-25",
  "prod_hom_f": "0",
  "prod_hom_m": "0",
  "prod_het_hemi_f": "1",
  "prod_het_hemi_m": "1",
  "prod_sperm": "0",
  "prod_embryos": "0",
  "prod_resusc": "0",
  "prod_wt_control_f": "1",
  "prod_wt_control_m": "1",
  "prod_other": "1"
}
}

```

### Example JSON input (all fields)

The following object contains all fields that are recognized by the API.

```

{
  "donor_info":
  {
    "strain_contacts":
    {
      "donor_contact":
      {
        "first_name": "Marshall Anderson",

```

```
    "last_name": "Young",
    "institution": "UC Davis",
    "email_address": "mayoung@example.com",
    "phone": "(916) 555-5555",
    "postal_address": "900 Ivy St., APT 10",
    "city": "Woodland",
    "state_province": "CA",
    "country": "USA",
    "title": "Mr.",
    "prefix": "Dr.",
    "suffix": "M.D."
  },
  "correspondence_contact":
  {
    "first_name": "Nina",
    "last_name": "Smith",
    "institution": "UC Davis",
    "email_address": "nina@example.com",
    "phone": "(916) 555-5555",
    "postal_address": "900 Shield St., APT 10",
    "city": "Woodland",
    "state_province": "CA",
    "country": "USA",
    "title": "Mr.",
    "prefix": "Dr.",
    "suffix": "M.D."
  },
  "transfer_contact":
  {
    "first_name": "Marshall Anderson",
    "last_name": "Young",
    "institution": "UC Davis",
    "email_address": "mayoung@example.com",
    "phone": "(916) 555-5555",
    "postal_address": "900 Ivy St., APT 10",
    "city": "Woodland",
    "state_province": "CA",
    "country": "USA",
    "title": "Mr.",
    "prefix": "Dr.",
    "suffix": "M.D."
  }
},
"strain_data":
{
  "strain_name": "C57BL/6J-A",
  "created_dt": "2016-01-21",
  "status": "Assign",
  "submission_type": "Type-2/NIDDK",
  "source_collection": "MBP Lab",
  "accepted_dt": "2016-02-23",
  "delayed_release_dt": "2017-06-21",
  "strain_type_id": "Congenic",
  "delayed_release_requested": "1",
  "publication_provided": "1",
  "nomen_sanctioned": "1",
  "is_di_protocol_onfile": "1",
  "is_profile_onfile": "1",
  "originated_on": "Davis",
  "maintained_on": "Davis",
  "mta_rcvd_dt": "2016-02-02",
  "mta_release_category": "Category 5",
```

```
    "mta_version": "16.04.01",
    "other_notes": "No notes"
  },
  "strain_detail":
  {
    "published_name": "not-wild mice",
    "is_transgenic": "No",
    "is_sexlinked": "Yes",
    "genetic_alteration": "Clone Control",
    "phenotype": "Normal",
    "genotyping": "Unexpressive",
    "reference": "No References Required",
    "strain_development": "Mutant Selection and Recombination",
    "current_background": "No Protocol",
    "available_control": "CCDBA/S-1124",
    "research_applications": "No Research Application",
    "coat_color": "Black",
    "other_appearance": "White coloring on feet and ear tips",
    "breeding_system": "Sib-mating",
    "breeding_schemes": "Cross",
    "breeding_performance": "Undetermined",
    "f_hom_viable": "Yes",
    "m_hom_viable": "N/A",
    "f_hom_fertile": "N/A",
    "m_hom_fertile": "N/A",
    "f_het_hemi_fertile": "Reduced",
    "m_het_hemi_fertile": "N/A",
    "f_age_repdec": "10 weeks",
    "m_age_repdec": "N/A",
    "ave_pups_born": "0",
    "wean_age": "N/A",
    "special_husbandry": "None",
    "availability_level": "Low",
    "hide_colony_husbandry_info": "Yes",
    "show_repro_stat": "Yes",
    "sds_status": "QC",
    "protocol_status": "Center Protocol",
    "public_display": "No",
    "generation": "1",
    "hom_viable_comment": "This is a comment",
    "het_hemi_fertile_comment": "No",
    "health_status_cryo": "Done"
  },
  "locus_data":
  {
    "items":
    [
      {
        "symbol": "NONE",
        "markup_symbol": "MARKUP011",
        "resource_id": "03",
        "mgi_acc_id": "18644750",
        "external_acc_id": "18644750-00185",
        "name": "Rattatouie",
        "segment_type": "QTL",
        "species": "Mus Musculus",
        "chromosome": "XX",
        "locus_notes": "Notes go here.",
        "alteration_desc": "A type-string field.",
        "alteration_id": "Spontaneous Mutation",
        "cell_line_id": "CJ7",
        "locus_role": "Inducer"
      },
    ]
  }
}
```

```

        {
          "symbol": "NONE",
          "markup_symbol": "MARKUP011",
          "resource_id": "03",
          "mgi_acc_id": "18644750",
          "external_acc_id": "18644750-00185",
          "name": "Rattatouie",
          "segment_type": "QTL",
          "species": "Mus Musculus",
          "chromosome": "XX",
          "locus_notes": "Notes go here.",
          "alteration_desc": "A type-string field.",
          "alteration_id": "Knockout",
          "cell_line_id": "AB1",
          "locus_role": "Inducer"
        }
      ]
    },
    "importation_data":
    {
      "center_id": "MU",
      "assigned_dt": "2016-02-05",
      "closed_dt": "2016-11-21",
      "close_status": "Extinct",
      "mice_rcvd_dt": "2016-03-15",
      "verified_cryo_dt": "2016-10-15",
      "rearchived_date": "2016-10-21",
      "availability": "ES cell line",
      "availability_note": "",
      "germplasm_received": "yes",
      "estimated_avd_dt": "2016-09-25",
      "avd_dt": "2016-10-21",
      "importation_note": "",
      "withdrawn_dt": "2016-10-21",
      "prod_hom_f": "0",
      "prod_hom_m": "0",
      "prod_het_hemi_f": "1",
      "prod_het_hemi_m": "1",
      "prod_sperm": "0",
      "prod_embryos": "0",
      "prod_resusc": "0",
      "prod_wt_control_f": "1",
      "prod_wt_control_m": "1",
      "prod_es_cell_line": "1",
      "prod_other": "1"
    },
    "pricing": {
      "MU": {
        "cryo-recovery": "Cryorecovery via IVF: pigmented"
      }
    }
  }
}

```

### Input JSON Schema

Submitted JSON should be structured in accordance with the following schema.

```

{
  "$schema": "http://json-schema.org/draft-04/schema#",
  "title": "Submission",
  "description": "MMRRC Submission",
  "type": "object",
  "definitions": {

```

```
"contact": {
  "first_name": {
    "type": "string"
  },
  "last_name": {
    "type": "string"
  },
  "institution": {
    "type": "string"
  },
  "email": {
    "type": "string"
  },
  "phone": {
    "type": "string"
  },
  "postal_address": {
    "type": "string"
  },
  "city": {
    "type": "string"
  },
  "state_province": {
    "type": "string"
  },
  "postal_code": {
    "type": "string"
  },
  "country": {
    "type": "string"
  },
  "title": {
    "type": "string"
  },
  "prefix": {
    "enum": [
      "Dr.",
      "Mr.",
      "Mrs.",
      "Ms.",
      "Prof."
    ]
  },
  "suffix": {
    "enum": [
      "Ph.D.",
      "M.D.",
      "D.V.M.",
      "D.D.S.",
      "M.D., Ph.D.",
      "D.V.M., Ph.D.",
      "D.D.S., Ph.D.",
      "M.D., D.V.M.",
      "M.D., D.V.M., Ph.D.",
      "N/A"
    ]
  }
},
"properties": {
  "donor_info": {
    "type": "object",
    "properties": {
```



```
"strain_contacts": {
  "type": "object",
  "properties": {
    "donor_contact": {
      "$ref": "#/definitions/contact"
    },
    "correspondence_contact": {
      "$ref": "#/definitions/contact"
    },
    "transfer_contact": {
      "$ref": "#/definitions/contact"
    }
  }
},
"required": [
  "donor_contact",
  "correspondence_contact",
  "transfer_contact"
],
"strain_data": {
  "type": "object",
  "properties": {
    "strain_name": {
      "type": "string"
    },
    "created_dt": {
      "type": "date"
    },
    "mgi_acc_id": {
      "type": "string"
    }
  },
  "status": {
    "enum": [
      "Review/Scheduled",
      "Review/New",
      "Review/Priority",
      "Assign",
      "Record",
      "Deferred",
      "Accepted",
      "Referred",
      "Declined",
      "Withdrawn",
      "Extinct",
      "Rescinded",
      "Erroneous Entry"
    ]
  },
  "submission_type": {
    "enum": [
      "Type-1",
      "Type-2/KOMP 60",
      "Type-2/MMRRC",
      "Type-2/NIA",
      "Type-2/NIAID",
      "Type-2/NICHD",
      "Type-2/NIDCD",
      "Type-2/NIDCR",
      "Type-2/NIDDK",
      "Type-2/NINDS",
      "Type-3",

```

```
    "Type-3/BP/AI",
    "Type-3/NIEHS",
    "Type-3/NINDS",
    "Center created",
    "Type-2",
    "Type-2/NIEHS"
  ]
},
"source_collection": {
  "type": "string"
},
"accepted_dt": {
  "type": "date"
},
"delayed_release_dt": {
  "type": "date"
},
"strain_type_id": {
  "enum": [
    {
      "Unclassified": "0",
      "Inbred": "10",
      "Recombinant Inbred": "11",
      "Wild-derived Inbred": "12",
      "Segregating Inbred": "13",
      "Non-segregating Inbred": "14",
      "Mutant Strain": "15",
      "Congenic": "40",
      "Recombinant Congenic": "41",
      "Mutant Congenic": "42",
      "Coisogenic": "50",
      "Consomic": "60",
      "Non-inbred Stock": "80",
      "Mutant Stock": "81",
      "Wildtype Littermate Control": "100"
    }
  ]
},
"delayed_release_requested": {
  "enum": [
    "1",
    "0"
  ]
},
"publication_provided": {
  "enum": [
    "1",
    "0"
  ]
},
"nomen_sanctioned": {
  "enum": [
    "1",
    "0"
  ]
},
"is_di_protocol_onfile": {
  "enum": [
    "1",
    "0"
  ]
},
"is_profile_onfile": {
```

```
        "enum": [
            "1",
            "0"
        ]
    },
    "originated_on": {
        "type": "string"
    },
    "maintained_on": {
        "type": "string"
    },
    "mta_rcvd_dt": {
        "type": "date"
    },
    "mta_release_category": {
        "type": "string"
    },
    "mta_version": {
        "type": "string"
    }
}
},
"strain_detail": {
    "type": "object",
    "properties": {
        "published_name": {
            "type": "string"
        },
        "is_transgenic": {
            "enum": [
                "Yes",
                "No"
            ]
        },
        "is_sexlinked": {
            "enum": [
                "Yes",
                "No"
            ]
        },
        "genetic_alteration": {
            "type": "string"
        },
        "phenotype": {
            "type": "string"
        },
        "genotyping": {
            "type": "string"
        },
        "reference": {
            "type": "string"
        },
        "strain_development": {
            "type": "string"
        },
        "current_background": {
            "type": "string"
        },
        "available_control": {
            "type": "string"
        },
        "research_applications": {
            "type": "string"
        }
    }
}
```

```
    },
    "coat_color": {
      "type": "string"
    },
    "other_appearance": {
      "type": "string"
    },
    "breeding_system": {
      "enum": [
        "Backcross",
        "Sib-mating",
        "Random intra-strain mating",
        "Outcross to non inbred (hybrid or outbred) mate",
        "Other or uncertain"
      ]
    },
    "breeding_schemes": {
      "type": "string"
    },
    "breeding_performance": {
      "enum": [
        "Excellent",
        "Good",
        "Poor",
        "Undetermined"
      ]
    },
    "f_hom_viable": {
      "enum": [
        "Yes",
        "No",
        "Reduced",
        "Undetermined",
        "Unknown",
        "N/A"
      ]
    },
    "m_hom_viable": {
      "enum": [
        "Yes",
        "No",
        "Reduced",
        "Undetermined",
        "Unknown",
        "X-linked",
        "N/A"
      ]
    },
    "f_hom_fertile": {
      "enum": [
        "Yes",
        "No",
        "Reduced",
        "Sterile",
        "Undetermined",
        "Unknown",
        "N/A"
      ]
    },
    "m_hom_fertile": {
      "enum": [
        "Yes",
        "No",
```

```
        "Reduced",
        "Sterile",
        "Undetermined",
        "Unknown",
        "X-linked",
        "N/A"
    ]
},
"f_het_hemi_fertile": {
    "enum": [
        "Yes",
        "No",
        "Reduced",
        "Sterile",
        "Undetermined",
        "Unknown",
        "N/A"
    ]
},
"m_het_hemi_fertile": {
    "enum": [
        "Yes",
        "No",
        "Reduced",
        "Sterile",
        "Undetermined",
        "Unkown",
        "N/A"
    ]
},
"f_age_repdec": {
    "type": "string"
},
"m_age_repdec": {
    "type": "string"
},
"ave_pups_born": {
    "type": "string"
},
"wean_age": {
    "type": "string"
},
"special_husbandry": {
    "type": "string"
},
"availability_level": {
    "type": "string"
},
"hide_colony_husbandry_info": {
    "enum": [
        "Yes",
        "No"
    ]
},
"show_repro_stat": {
    "enum": [
        "Yes",
        "No"
    ]
},
"sds_status": {
    "enum": [
        "In Progress",
```

```
        "Needs Publication",
        "QC",
        "Complete",
        "Needs Update",
        "Updated & Complete",
        "N/A"
    ]
},
"protocol_status": {
    "enum": [
        "Needs Protocol",
        "Donor Protocol",
        "Center Protocol",
        "Center and Donor Protocol",
        "Image",
        "Image and Protocol",
        "Statement",
        "Fix",
        "Phenotype"
    ]
},
"public_display": {
    "enum": [
        "Yes",
        "No"
    ]
},
"generation": {
    "type": "string"
},
"hom_viable_comment": {
    "type": "string"
},
"het_hemi_fertile_comment": {
    "type": "string"
},
"health_status_cryo ": {
    "type": "string"
}
}
},
"locus_data": {
    "type": "array",
    "items": {
        "type": "object",
        "properties": {
            "symbol": {
                "type": "string"
            },
            "markup_symbol": {
                "type": "string"
            },
            "resource_id": {
                "type": "string"
            },
            "mgi_acc_id": {
                "type": "string"
            },
            "external_acc_id": {
                "type": "string"
            },
            "name": {
                "type": "string"
            }
        }
    }
}
```

```
},
"segment_type": {
  "enum": [
    "Gene",
    "Allele",
    "DNA Segment",
    "Cytogenetic Marker",
    "Pseudogene",
    "Complex/Cluster/Region",
    "Transgene",
    "Transposon",
    "Other Genome Feature",
    "Erroneous Entry",
    "Chromosome",
    "QTL",
    "QTL Variant"
  ]
},
"species": {
  "type": "string"
},
"chromosome": {
  "type": "string"
},
"locus_notes": {
  "type": "string"
},
"alteration_desc": {
  "type": "string"
},
"alteration_id": {
  "enum": [
    {
      "Non-mutant": "1",
      "Spontaneous Mutation": "2",
      "Induced Mutation": "3",
      "Chemically Induced": "4",
      "Radiation Induced": "5",
      "Transgenic": "6",
      "Targeted Mutation": "7",
      "Knockout": "8",
      "Knock-In": "9",
      "Gene Trap": "10",
      "Conditional": "11",
      "Transgenic (BAC)": "21",
      "Transgenic (cre)": "22",
      "FRT": "23",
      "Chromosomal Aberration": "24",
      "Deletion": "25",
      "Duplication": "26",
      "Insertion": "27",
      "Inversion": "28",
      "Translocation, Insertional": "29",
      "Translocation, Reciprocal": "30",
      "Translocation, Robertsonian": "31",
      "Transposition": "32",
      "Polymorphic allele": "41",
      "Transgenic (random, gene disruption)": "347",
      "Chromosome Substitution": "348",
      "Knockout-first": "349",
      "Targeted Non-Conditional": "350"
    }
  ]
}
```

```
},
"cell_line_id": {
  "enum": [
    {
      "AB1": "1",
      "AB2.1": "2",
      "AK7": "3",
      "CJ7": "4",
      "D3": "5",
      "E14": "6",
      "HM-1": "7",
      "J1": "8",
      "R1": "9",
      "RF8": "10",
      "RW-4": "11",
      "TC1/TC-1": "12",
      "TL1/TL-1": "13",
      "WW6": "14",
      "W9.5/W95": "23",
      "REK3": "25",
      "REK2": "27",
      "E14.1": "31",
      "E14Tg2a.4": "61",
      "AB2.2": "121",
      "CCE/EK.CCE": "221",
      "TT2": "223",
      "W4": "341",
      "CGR8": "481",
      "E14TG2a": "701",
      "G4": "763",
      "GSI-1": "841",
      "Not specified": "901",
      "Not applicable": "902",
      "v6.5": "983",
      "WD44": "1161",
      "Lexicon cell line": "1181",
      "SM1": "1301",
      "Bruce4": "1303",
      "Duffy ": "1341",
      "81E10-40F": "1403",
      "JM-1": "1603",
      "EF1": "1921",
      "EC7.1": "2241",
      "JM8": "2281",
      "mEMS1204": "2381",
      "mEMS1218": "2382",
      "mEMS21": "2383",
      "mEMS21TG2A": "2384",
      "mEMS1202": "2385",
      "BK4": "2401",
      "JM8.F6": "2521",
      "JM8A3": "2522",
      "mEMS1217": "2681",
      "mEMS1254": "2682",
      "mEMS1292": "2683",
      "CMTI-1": "2685",
      "AK7.1": "2689",
      "JM8.N4": "2690",
      "Lex3.13": "2691",
      "CT129": "2695",
      "Lex-1": "2696",
      "CB1-4AS": "2697",
      "JMA7": "2698",
```



```
        "PC3": "2699",
        "P1": "2700",
        "BL/6-III": "2701",
        "D1": "2702",
        "JM8A3.N1": "2703",
        "C2": "2704",
        "mEMS4857.02": "2705",
        "mEMS4855.02": "2706",
        "LW1": "2707",
        "LR2.6.1": "2708",
        "IB10": "2709",
        "JM8A1.N3": "2710",
        "JM8A3.N1.C2": "2711",
        "N1": "2712"
    }
  ]
},
"locus_role": {
  "enum": [
    "Target",
    "Transgene",
    "Promoter",
    "Modifier",
    "Reporter",
    "Enhancer",
    "Centomeric end point",
    "Telomeric end point",
    "Transposon",
    "Inducer"
  ]
}
},
"importation_data": {
  "type": "object",
  "properties": {
    "center_id": {
      "enum": [
        "-TBD-",
        "ICSC",
        "JAX",
        "MU",
        "T/A",
        "UCD",
        "UNC"
      ]
    }
  },
  "assigned_dt": {
    "type": "date"
  },
  "closed_dt": {
    "type": "date"
  },
  "close_status": {
    "enum": [
      "AVD",
      "Erroneous Entry",
      "Extinct",
      "Reassigned",
      "Referred",
      "Rescinded",
      "Withdrawn",
    ]
  }
}
```

```
    "Declined"
  ]
},
"mice_rcvd_dt": {
  "type": "date"
},
"verified_cryo_dt": {
  "type": "date"
},
"rearchived_date": {
  "type": "date"
},
"availability": {
  "enum": [
    "Breeder pairs",
    "Cryo-archive",
    "ES cell line",
    "Currently Unavailable",
    "Hidden"
  ]
},
"availability_note": {
  "type": "string"
},
"germplasm_received": {
  "enum": [
    "yes",
    "no"
  ]
},
"estimated_avd_dt": {
  "type": "date"
},
"avd_dt": {
  "type": "date"
},
"importation_note": {
  "type": "string"
},
"withdrawn_dt": {
  "type": "date"
},
"prod_hom_f": {
  "enum": [
    "1",
    "0"
  ]
},
"prod_hom_m": {
  "enum": [
    "1",
    "0"
  ]
},
"prod_het_hemi_f": {
  "enum": [
    "1",
    "0"
  ]
},
"prod_het_hemi_m": {
  "enum": [
    "1",
```

```
    "0"
  ]
},
"prod_sperm": {
  "enum": [
    "1",
    "0"
  ]
},
"prod_embryos": {
  "enum": [
    "1",
    "0"
  ]
},
"prod_resusc": {
  "enum": [
    "1",
    "0"
  ]
},
"prod_wt_control_f": {
  "enum": [
    "1",
    "0"
  ]
},
"prod_wt_control_m": {
  "enum": [
    "1",
    "0"
  ]
},
"prod_es_cell_line": {
  "enum": [
    "1",
    "0"
  ]
},
"prod_other": {
  "enum": [
    "1",
    "0"
  ]
}
},
"pricing": {
  "JAX": {
    "live-mice": {
      "enum": [
        "Tier 1",
        "Tier 2"
      ]
    }
  },
  "MU": {
    "cryo-recovery": {
      "enum": [
        "Cryorecovery from Embryo: pigmented",
        "Cryorecovery from Embryo: albino",
        "Cryorecovery via IVF: pigmented",
        "Cryorecovery via IVF: albino",
```

```
        "Cryorecovery via ICSI: pigmented",
        "Cryorecovery via ICSI: albino"
    ]
  },
},
"UCD": {
  "cryo-recovery": {
    "enum": [
      "Tier 1",
      "Tier 2",
      "Tier 3"
    ]
  }
}
}
}
```

### Caveats:

- All interactions with the API are logged, including IP addresses for anonymous connections and center credentials for authenticated usage.
- All submissions will have a status of "APIsubmission" post API validation and will not be publicly available until the data is QC'd and curated.
- We will be modifying this API based on user feedback so please feel free to contact us with requests. We will update this documentation to reflect changes as we can.

### Useful tools:

- **HTML response**  
Retrieval (GET) functions accept 'HTML' as the last parameter in the URL. If this parameter is present, the output will be returned in the HTML format for easy reading, instead of the JSON. Example usage:

```
GET https://api.mmrrc.org/api/v1/catalog/getCatalog/20/html
```

- **JSON linter**  
To make sure that the input JSON is valid or to beautify the JSON returned by the API, you can use one of many free online JSON linters such as: [www.jsonlint.com](http://www.jsonlint.com) or [www.codebeautify.com](http://www.codebeautify.com).
- **cURL**  
To easily test the API from the command line, use cURL. The following example creates a new submission via the API:

```
$ curl --header "x-api-key: eceab84fdb2d986f" --data-binary @sample_api.json  
http://api.mmrrc.org/api/v1/submission
```

where:

- eceab84fdb2d986f is your private API key,
  - sample\_api.json is the name of the file containing JSON input (see examples above).
-