

Unlocking the Power of Genedata Biologics: Exploring How We Use The Genedata Biologics Within BMD

Yinfeng Zhang, Diana Sapashnik

September 14th, 2023

Genedata Biologics

The screenshot shows the Genedata Biologics website. At the top, there is a navigation bar with links for Products & Services, Knowledge, News & Events, Careers, Company, Why Genedata, a search icon, and a green "Contact Us" button. Below the navigation bar, there is a grid of service offerings:

Biopharma Platform Digitalizing R&D	BIOLOGICS Biotherapeutics Discovery	BIOPROCESS Bioprocess Development	EXPRESSIONIST Mass Spectrometry Data Analysis	IMAGENCE Deep Learning HCS Image Analysis
Services Biopharma R&D Services	PROFILER Precision Medicine	SCREENER Assay Analysis and Management	SELECTOR NGS-Based Development & Biosafety	

On the left side, there is a large callout box for "Genedata Biologics®" featuring a logo of a stylized Y-shaped icon inside a circle. Below the logo, there are six service icons with labels: Antibody Screening, Protein Engineering, Virus Production, Protein Production, Nucleic acid Production, and Cell and Gene Therapy.

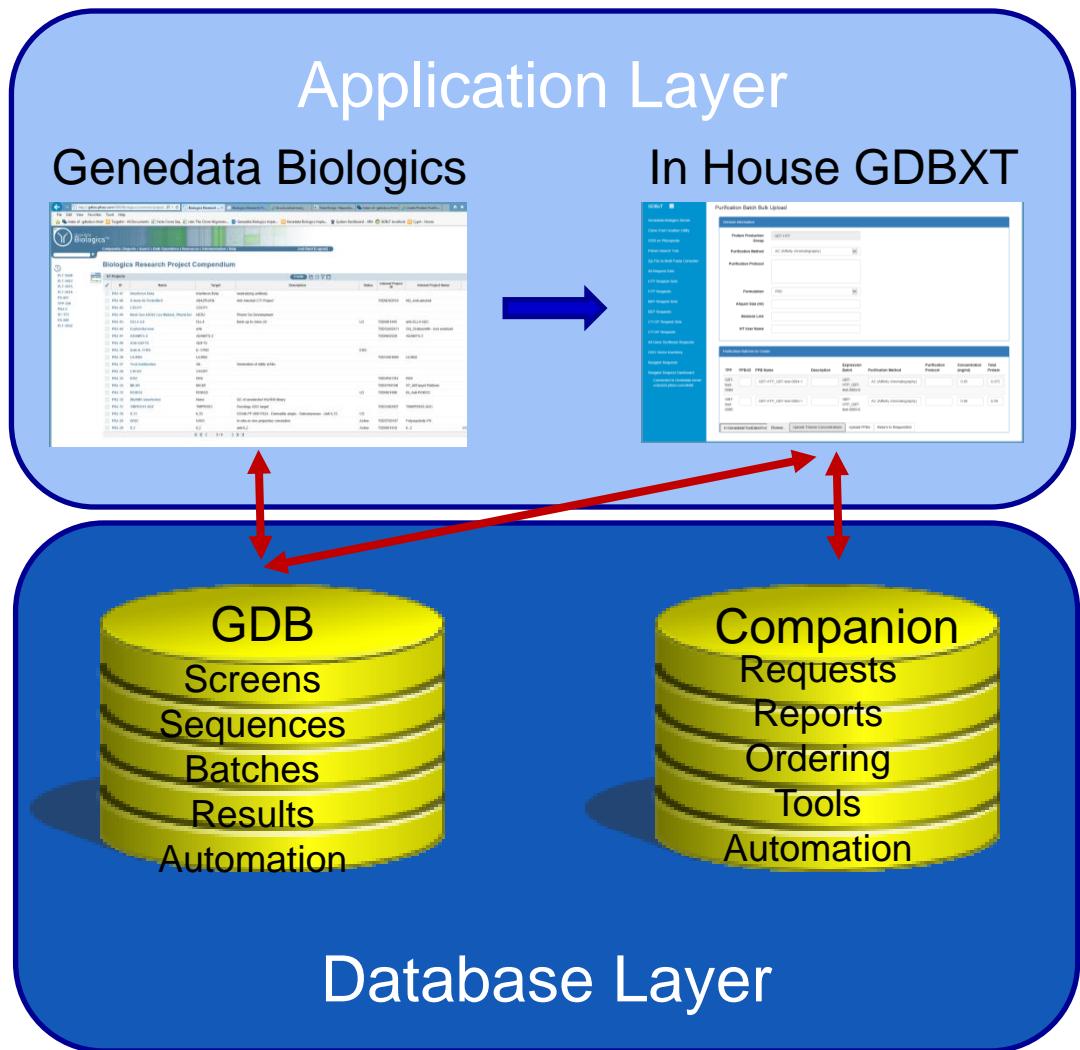
On the right side, there is a detailed view of the BIOLOGICS service, showing a sidebar with links: Biologics Online Documentation (selected), Bioprocess Online Documentation, Configuration Overview, Pipeline Pilot, Supplementary User Manual, SpotFire Access, Pfizer Workflows and Documentation, and GDBXT.



BioMedicine Design

Breakthroughs that change patients' lives

What Is GDBxT?



Create LRs CoA Extended Table ⚙

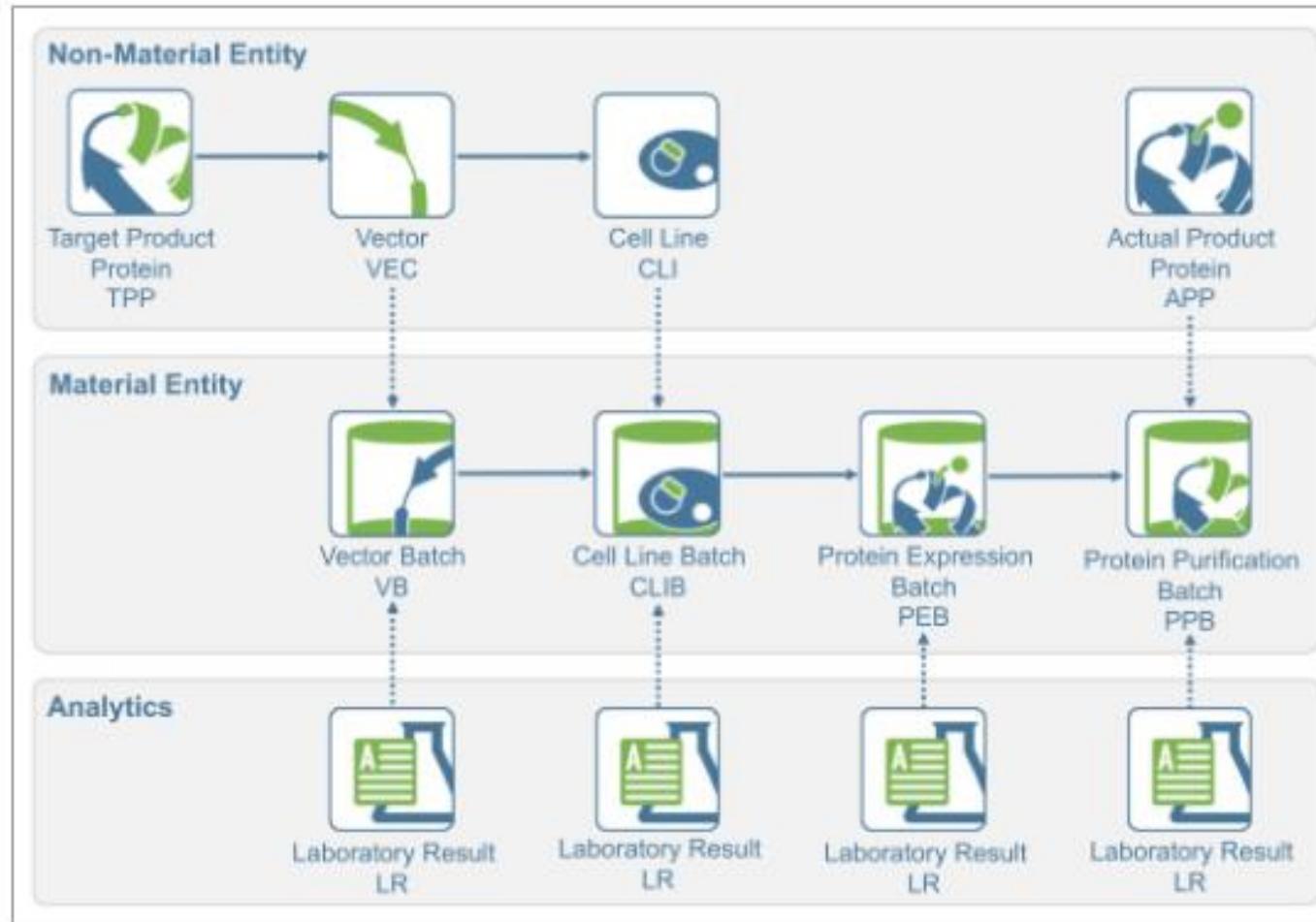
- Register PF Number for Purification Batch
- Add PPBs to Existing Analysis Request Set
- Alignment and properties export
- Request Biosensor Analysis From PPBs
- Request Formulation for RNA
- Request Mass Spec Analysis
- Request Molecular Assessment**
- Request mRNA Molecular Assessment
- Export PPBs to Excel



Questions or issues? Email **DL-BMD_BIOINFORMATICS**

Breakthroughs that change patients' lives

Genedata Core Concepts



- Non-Material Entity – The idea of what we're going to make
 - Sequences
 - Type of biotherapeutic
- Material Entity – The thing we actually made
 - Which plasmids were used?
 - Concentration of plasmid batch; when was it made and by who?
 - Expression conditions?
 - Purification conditions?
- Analytics – Results of assay run

TPPs* In Genedata – Target Product

- TPP is a biotherapeutic entity – mAb, bispecific, mRNA, AAV, etc.
- TPPs must be associated with one or more Project
- TPPs can be created by providing sequences either through upload, linking to existing plasmids (VEC) in the system, or without a sequence (which can be uploaded later)

Sequences

Import a Plasmid file containing annotations marking the Protein sequences for the Target Product or select existing Plasmid Encoded Chain.

The file may be in Genbank .gb format. The system tries to match annotation text found in the file (e.g., "mature heavy chain") with expected names of protein chains. A description of the annotations the system expects can be found in the [chain identification documentation](#).

Import...

Light Chain **Heavy Chain 1** **Heavy Chain 2**

Existing Plasmid	Encoded Chain
Plasmid Name	Light Chain
Backbone Vector	VEC-76714 (AbC light chain) -- Light Chain
Add to Target Product	VEC-76711 (AbB light chain) -- Light Chain
Create first Plasmid Batch	VEC-76709 (AbA light chain) -- Light Chain
Protein Sequence	VEC-76708 (Ab7 light chain) -- Light Chain
No protein sequence extract	VEC-76705 (Ab6 light chain) -- Light Chain
Genbank file comment	VEC-76704 (Ab5 light chain) -- Light Chain
Comment from Source	VEC-76702 (Ab2 light chain) -- Light Chain
File	VEC-76696 (RO-v3 light chain) -- Light Chain
	VEC-70949 (Hz73D1.v1 light chain) -- Light Chain
	VEC-70948 (Hz64AI2 light chain) -- Light Chain
	- Showing the first 10 results only -

Web Protein Analyzer [Create](#) [v](#)

By uploading a GenBank file

Upload annotated GenBank file(s) containing the TPP's DNA sequence to simultaneously create two new entities: a TPP and its associated vector(s) encoding the TPP

Copy and paste sequence

Import FASTA file

Import GenPept file

Import Genbank file

Import GenPept/Genbank file

Without sequence

Import GenPept Archive (Bulk)

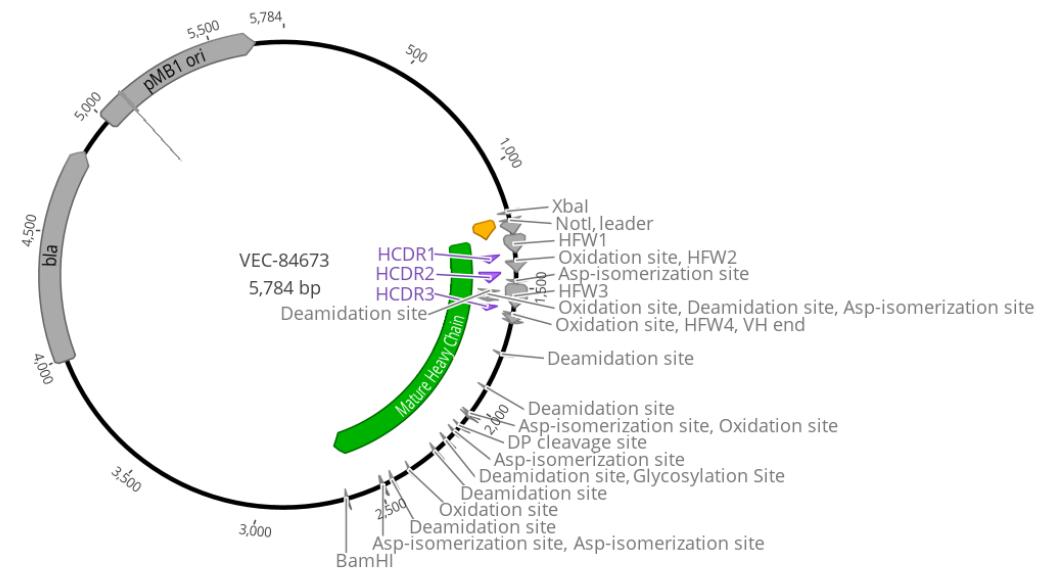
From Plasmids

.gb

geneious prime

Next ...
The Lineage View shows the relationships between a document and any others that were used to create it or were created from it.

Loading... Version 2020.1.2



*Genedata legacy note : TPP originally stood for Target Protein Product. A lot of Protein nomenclature remains from pre-2020 when Genedata was used exclusively for antibodies and other proteins.

TPP - Registering Different Types of Biotherapeutics

Create New Target Product from File

Step 1 of 3

This sequence of pages guides you through the process of creating a new Target Product and adding it to Project PRJ-528.

The Target Product is read from a Genbank file containing an expression construct with feature annotations following the according naming convention.

Type and Format

Please select purpose, type and format of the Target Product.

Purpose * Therapeutic

Type of Product * Antibody

Format * IgG

Light Chain Isotype * Deduce from Constant Region

Heavy Chain Isotype * Deduce from Constant Region

Antibody Library LIB-2 (GBT Mouse Refer)

Complexation * 2

Chain Multiplicity Light Chain: 1, Heavy Chain: 1

Chain Identification for Genbank Import

Chain	Identification String	Example
Light Chain	(?i)mature LC	
Light Chain	(?i)mature light chain	mature light chain
Heavy Chain	(?i)mature HC	
Heavy Chain	(?i)mature heavy chain	mature heavy chain

Cancel Next



- When creating a new TPP need to select the right format
- Antibody library important for Genedata automatic annotations of CDRs and FWRs
- Complexation automatically set by format; monomer, dimer, n-mer
- Chain multiplicity is number of copies of chain / complexation

- All available formats listed in Product Configurations, Formats table
- Need new format? Email **DL-BMD_BIOINFORMATICS** with fasta/Genbank example and image for Genedata
- Formats define chains – example HC and LC for IgG
- Chain annotations are interpreted by Genedata Biologics – example : extract gene of interest for mRNA by finding mature_mrna annotation
- For protein chains annotation covers translated sequence; for mRNA chain annotation covers end of T7 promoter to polyA tail

Resources Admin

Controlled Vocabularies

Measurement Types

Antigen Layouts

Plate Layouts

Motifs and Feature Types

Product Configurations

Signed Documents

Other Resources

Biologics Online Documentation

Bioprocess Online Documentation

Configuration Overview

Pipeline Pilot

Supplementary User Manual

SpotFire Access

Pfizer Workflows and Documentation

GDBXT

Assays (for Assay Runs)

Assays (for Measurement Runs)

Assays (for Laboratory Results)

Chain Identification

Entities and Controlled Vocabulary

Auto-calculated Fields

Cloning Strategies

Processing Agendas

TPP Format Zoo In GDBxT

IGG

Complexation *

Chain Multiplicity Light Chain: 1, Heavy Chain: 1



Complexation 2

Chain Name	Vec Annotation
Light Chain	mature light chain
Heavy Chain	mature heavy chain

GDBxT (sapasd)

Genedata Biologics Server

Load Daily PEB Data

TPP Format Zoo

Primer Search Tool

IGG-BISPECIFIC

Complexation *

Chain Multiplicity Light Chain 1: 1, Heavy Chain 1: 1, Heavy Chain 2: 1, Light Chain 2: 1



Complexation 1

Chain Name	Vec Annotation
Light Chain 1	mature light chain 1
Light Chain 2	mature light chain 2
Heavy Chain 1	mature heavy chain 1
Heavy Chain 2	mature heavy chain 2

IGG-BISPECIFIC (SINGLE COMMON LC, K-IN-H)

Complexation *

Chain Multiplicity Light Chain: 2, Heavy Chain 1: 1, Heavy Chain 2: 1



Complexation 1

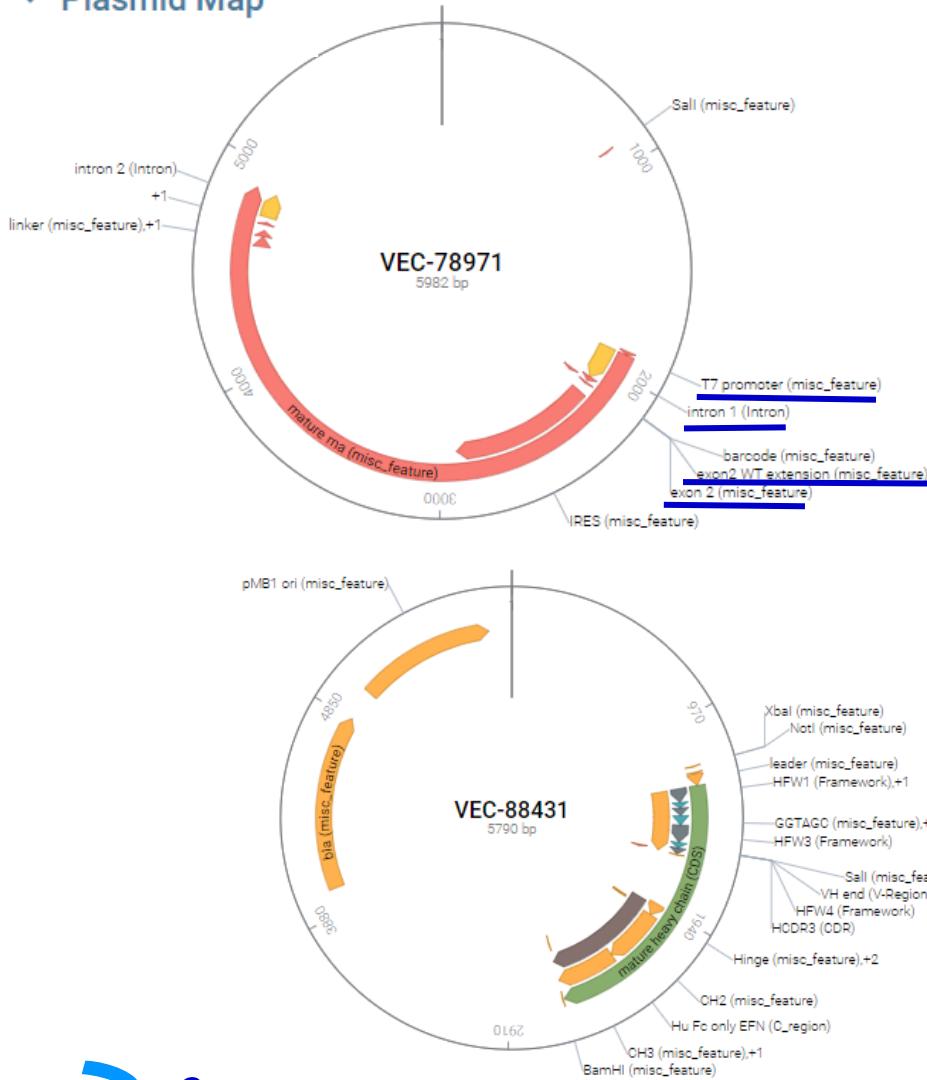
Chain Name	Vec Annotation
Heavy Chain 2	mature heavy chain 2
Light Chain	mature light chain
Heavy Chain 1	mature heavy chain 1

Breakthroughs that change patients' lives

7

Vector (Plasmid) Registration

Plasmid Map



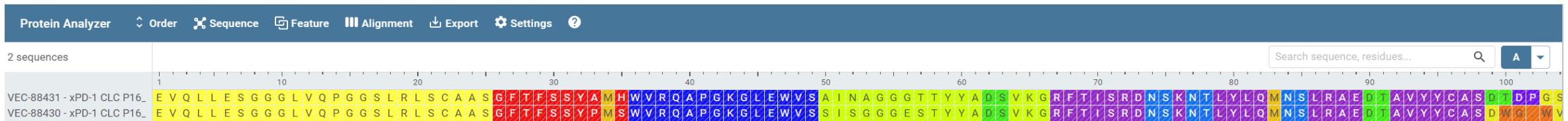
- Plasmids are linked to a Target Product
- Can be reused by linking to other Target Products
- Chain annotations are interpreted by Genedata Biologics – example : extract gene of interest for mRNA by finding mature_mrna annotation
- Genbank file annotations displayed as plasmid features, original and Genedata generated Genbank files can be downloaded
- For protein chains annotation covers translated sequence; for mRNA chain annotation covers end of T7 promoter to polyA tail

12 (out of 13) Features

Type	Name	Range	Strand	Feature Sequence
Restriction Site	Sall	897..902	+	GTCGAC
misc_feature	Sall	897..902	+	GTCGAC
misc_feature	T7 promoter	1889..1905	+	TAATACGACT CACTATA
Intron	intron 1	1906..2089	+	GGGGGAGACC CTCGATTGGT TCTACATAAA TGCCCTAACGA CTATCCCTTT GGGGAGTAGG GTCAAGTGAC TCGAAACGAT AGACACATGG CTTTAACAGG TTGGAGATAT AGTCTGCTCT CATGGTGCAT ATCAGCTGG ATATAATTCC GGGGTAAGAT TAACCACCTT ATCTGAAACAT AATG
misc_feature	exon 2	2090..2113	+	CTACCGTTA ATATTGCGTC ATAT
misc_feature	exon 2 WT extension	2109..2123	+	CATATGCTAC GTTAG
Type	Name	Range	Strand	Description
Framework	HFW1	1289..1363	+	Identified by Genedata Framework Recognition by comparison to REF-373 (huIGHV3-23*01/3-23D*01_IGHJ4*01,02,03).
CDR	HCDR1	1364..1393	+	Identified by Genedata Framework Recognition by comparison to REF-373 (huIGHV3-23*01/3-23D*01_IGHJ4*01,02,03).
Framework	HFW2	1394..1435	+	Identified by Genedata Framework Recognition by comparison to REF-373 (huIGHV3-23*01/3-23D*01_IGHJ4*01,02,03).
CDR	HCDR2	1436..1486	+	Identified by Genedata Framework Recognition by comparison to REF-373 (huIGHV3-23*01/3-23D*01_IGHJ4*01,02,03).
Framework	HFW3	1487..1582	+	Identified by Genedata Framework Recognition by comparison to REF-373 (huIGHV3-23*01/3-23D*01_IGHJ4*01,02,03).
CDR	HCDR3	1583..1612	+	Identified by Genedata Framework Recognition by comparison to REF-373 (huIGHV3-23*01/3-23D*01_IGHJ4*01,02,03).
Framework	HFW4	1613..1645	+	Identified by Genedata Framework Recognition by comparison to REF-373 (huIGHV3-23*01/3-23D*01_IGHJ4*01,02,03).
C_region	Hu Fc only EFN	1955..2635	+	Identified by Genedata Constant Region Identification with a similarity of 100.0% to CON-42 (Hu Fc only EFN).

Vectors Cont.

- New version of Genedata includes sequence alignment for Vectors and TPPs
- Compendia → Plasmids or Target Product → [Web Protein Analyzer](#) ↴



- Other types of VEC
 - LVEC Backbone Vectors
 - AVEC Accessory Vectors

Resources ▾ Admin ▾

- Controlled Vocabularies
- Measurement Types
- Antigen Layouts
- Plate Layouts
- Motifs and Feature Types
- Product Configurations
- Signed Documents
- Other Resources

444 Backbone Expression Vectors

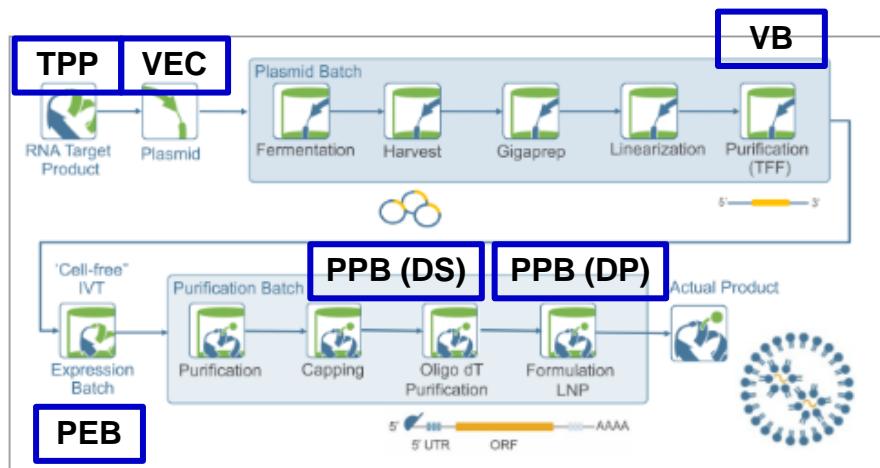
ID	Name	Plasmid Type
LVEC-87657	pSMEHgg	Backbone Expression Vector
LVEC-87656	pSMEN3gg	Backbone Expression Vector

23 Accessory Vectors

ID	Name	Plasmid Type
AVEC-84166	pL009-_LJ_Bxb1_pEE6.4+Bxb-NLS_SV40_polyA	Accessory Vector
AVEC-84165	pL009-_LJ_Bxb1_pEE6.4+Bxb-NLS_Kozak	Accessory Vector

Expression Batches (PEB)

- PEB is a combination of a Vector Batch (VB) and a Host Cell Line (Cell Free option for mRNA)
- Batch Type can be set to Protein, Nucleic Acid for mRNA, or Virus for legacy AAV; Batch Subtype is optional
- mRNA : What is the expression batch?



Details	
Name	<input type="text"/>
Synonym	<input type="text"/>
Description	<input type="text"/>
Batch Type *	Protein
Batch Subtype	Nucleic Acid Protein Selected Virus
Locked	<input type="checkbox"/>

Expression System	
Cell Free	Yes
Host Type	<input type="text"/>
Host Cell Line	<input type="text"/>
Host Cell Line Batch	<input type="text"/>
Expression System Type *	Please Choose
Plasmid Combination	<input type="text"/>
Transfection Reagent	<input type="text"/>
Transfection Protocol	<input type="text"/>
Attributes per Plasmid	
Please choose the relevant	

Purification Batches - PPBs

Batch Type can be set to Protein, Nucleic Acid for mRNA, or

Virus for legacy AAV; Batch Subtype is optional

Details

Name	(Text input field)
Synonym	(Text input field)
Description	(Text input field)
Locked	No
Batch Type *	Protein ←
Batch Subtype	Nucleic Acid Protein Virus
Parent Expression Batch	(Text input field)
Target Product	TPP-111314 (GBT-CD79a-U32U)
Complexed Target Product	(Text input field)
Chain Info	Heavy Chain, Light Chain

Multiple PPBs can be related to a single TPP

Purification Batches Compendium

84635 Purification Batches

Extended Table

ID	Batch Type	Batch Subtype	Modifications	Delivery System Component Name	Delivery System Component Ratio [%]	Concentration [mg/mL]	Parent Expression Batch ID	Parent Purification Batch ID	Target Product ID	Parent Expression Batch Name
PPB-91548	Nucleic Acid		CleanCap, N1-methylpseudouridine	ALC-159 PF-07311743, Cholesterol, DSPC, PF-07985731	1.6, 42.7, 9.4, 46.3	2.55	PEB-61843	PPB-71789	TPP-90038	Cali-mod Team Supply IV
PPB-91547	Nucleic Acid		CleanCap, N1-methylpseudouridine	ALC-159 PF-07311743, Cholesterol, DSPC, PF-07988705	1.6, 42.7, 9.4, 46.3	2.55	PEB-61843	PPB-71789	TPP-90038	Cali-mod Team Supply IV
PPB-91546	Nucleic Acid		CleanCap, N1-methylpseudouridine	ALC-159 PF-07311743, Cholesterol, DSPC, PF-08008649	1.6, 42.7, 9.4, 46.3	2.55	PEB-61843	PPB-71789	TPP-90038	Cali-mod Team Supply IV
PPB-91545	Nucleic Acid		CleanCap, N1-methylpseudouridine	ALC-159 PF-07311743, Cholesterol, DSPC, PF-08010025	1.6, 42.7, 9.4, 46.3	2.55	PEB-61843	PPB-71789	TPP-90038	Cali-mod Team Supply IV
PPB-91544	Nucleic Acid	mRNA	Nanoparticle Formulation	Cholesterol, DLin-MC3-DMA, DSPC, PEG2000-DMG	38.5, 50.0, 10.0, 1.5	6.0	PEB-74872	PPB-88893	TPP-105530	
PPB-91543	Nucleic Acid	mRNA	Nanoparticle Formulation	Cholesterol, DLin-MC3-DMA, DSPC, PEG2000-DMG	38.5, 50.0, 10.0, 1.5	6.0	PEB-74869	PPB-88890	TPP-105528	

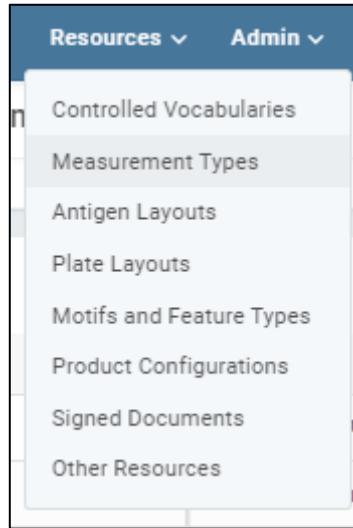


Purification Batch Hierarchy



Analyzing Batches - Laboratory Result Upload

- At each step of production, assays are run to confirm yields and batch quality
- Assay results translate to Laboratory Results, which can be attached to any Genedata entity batch



Plasmid Batch QC → Expression Batch QC → Purification Batch QC

PEB-75470 > Purification Batch PPB-89599 (HTP-mRNA_GBT-COVmAb-1633_PB-2)

4 Laboratory Result Values	
<input type="checkbox"/> Laboratory Result ID	Measurement Attribute
<input type="checkbox"/> LR-276140	Trinean Concentration
<input type="checkbox"/> LR-276140	Adjusted Concentration
<input type="checkbox"/> LR-276140	Stunner Concentration
<input type="checkbox"/> LR-276136	%POI

7567 Production Datasets

ID	Production Dataset Group	ELN	Number of Purification Batches	Number of Laboratory Results
PDS-7698	Research	https://gdbio.pfizer.com:8092/gdbxt/requestSet/show/25476	0	0
PDS-7697	Research	https://gdbio.pfizer.com:8092/gdbxt/requestSet/show/25474	0	0
PDS-7696	Research	https://gdbio.pfizer.com:8092/gdbxt/requestSet/show/25470	10	10
PDS-7695	Research	https://gdbio.pfizer.com:8092/gdbxt/requestSet/show/25469	0	0
PDS-7694	Research	https://gdbio.pfizer.com:8092/gdbxt/analysisRequestSet/show/3016	1	1
PDS-7693	Research	https://gdbio.pfizer.com:8092/gdbxt/analysisRequestSet/show/3015	2	2
PDS-7692	Research	https://gdbio.pfizer.com:8092/gdbxt/analysisRequestSet/show/3014	1	12

GDBxT Requests and Automatic Genedata Uploading

Production Requests (RS, FRS)

Production Request Sets

- HTP Request Sets
- BEP Transient Home Page
- BEP Stable Request Sets
- sBEP Engineering Request
- BMD-LJ Request Sets
- Dub HTP Request Sets
- Dub Medium Scale Requests
- Kitt Creek AAV PDP
- HTEP mRNA
- BenchTop mRNA
- BEP mRNA
- LJ mRNA

mRNA Analytics

- mRNA MA Requests
- Fragment Analyzer
- Stunner
- Formulation Request

Mass Spec

- View requests

Analysis Requests (ARS)

Molecular Assessment

- View requests
- Analysis Types
- Analysis profiles
- Measurement profiles
- Import Results

Biosensor Analysis Request Sets

- CAM Biosensor Request Sets
- LJ Biosensor Request Sets
- Biosensor SpotFire Dashboard

Editing ARS-2999

Save Changes

Request ID	ARS-2999	Production Dataset	PDS-7655
Project	PRJ-551 Alk1 mAb Athero	Date Submitted	8/8/2023
Requested By	Rhady Sorm	Summary Assigned To	Assign summary
Purpose	IgVHss_huALK1-ECD-TM (mRNA for immunization). Mouse immunization (Sept LNP delivery).	Summary ELN Root Path	https://prod.snbprd1ykv.perkinelmercloud.com/elements/entity/experiment021d38ba-707f-4143-a734-476deabb5d17?focus=experiment%3A8fbdb709-b86e-4f1a-8e87-498e040e099f
Comment	FA & Stunner only (DS QC for immunization efforts).		

Details

ID PDS-7613

Name ARS-2977

Description High priority - animal study

Production Dataset Group Research

ELN <https://gdbio.pfizer.com:8092/gdbxt/analysisRequestSet/show/2977>

Show empty properties

Purification Batches

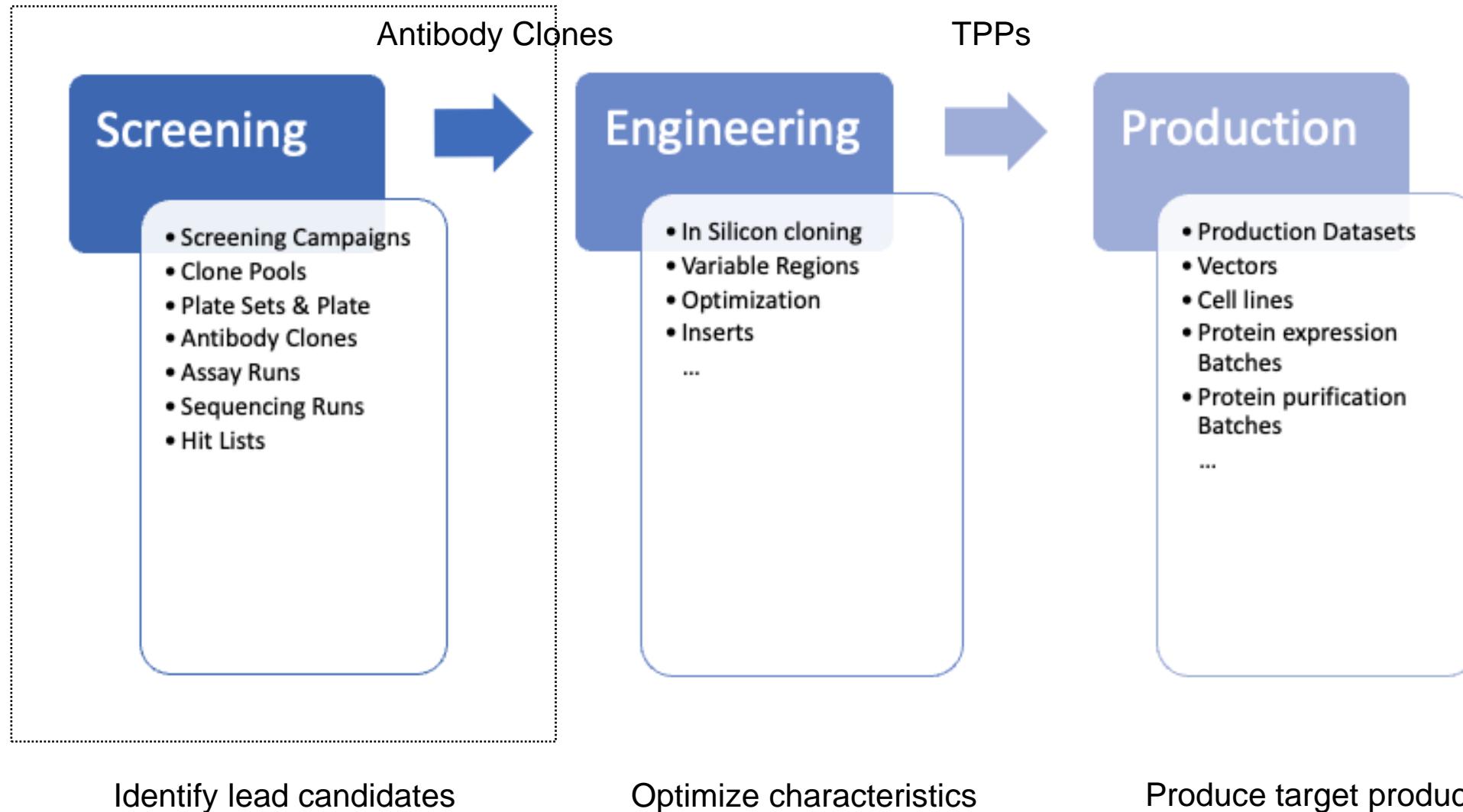
<input type="checkbox"/> TPP-ID	TPP Name
Add SEC Results	Add Lab Results

Laboratory Result Type

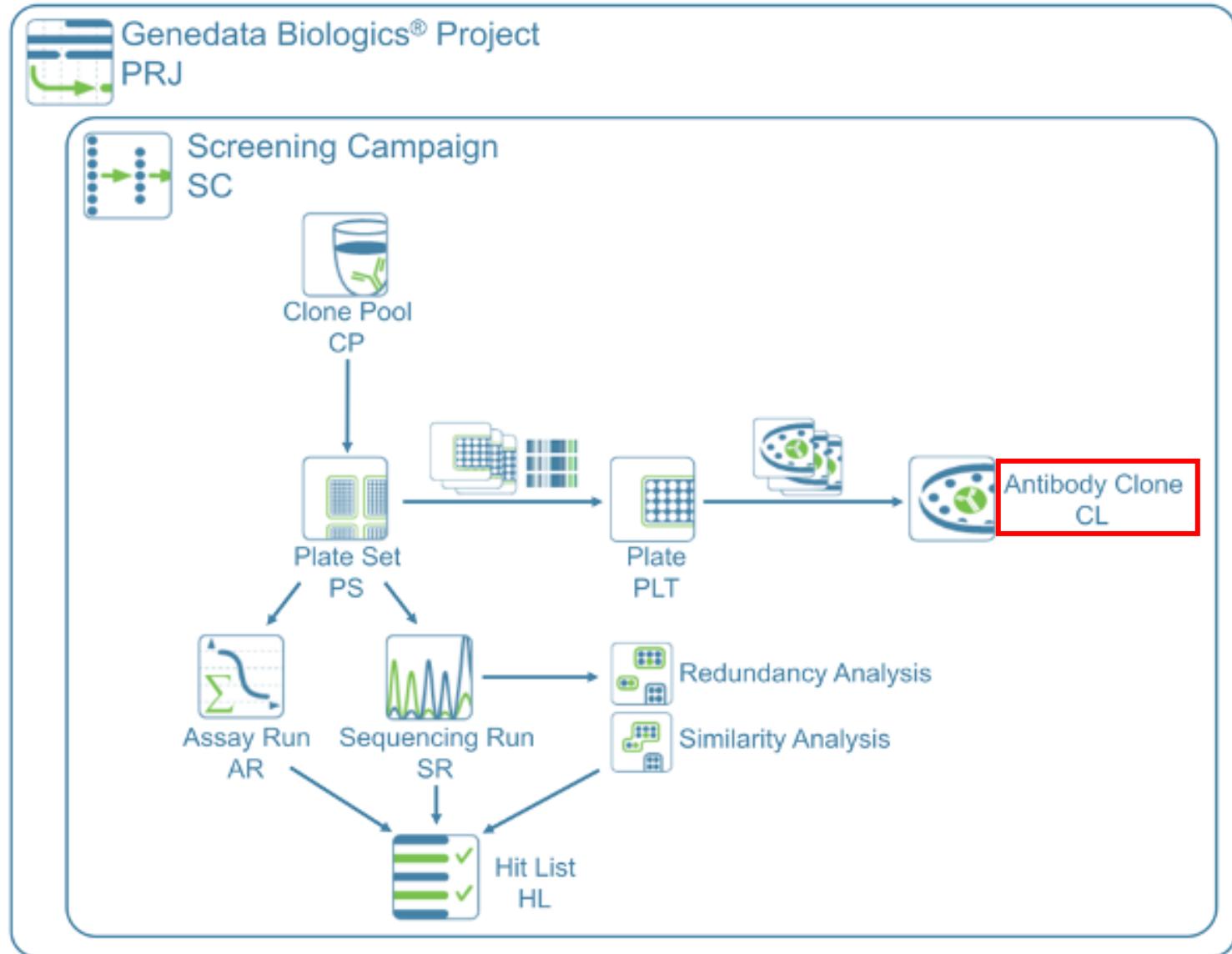
Measurement Type	ELISA
Number of Samples	Endotoxin Measurement
User ID	HPLC
Laboratory Results Data Entry	SDS-PAGE
Analyzed Entity ID	SEC
Measurement Type	SLS
ELISA	Biacore
	MS
	Bioanalyzer
	Edman Analysis
	Coatest
	HTP SEC
	Filtration
	LCMS
	Rodent Virus Testing
	HTP Transfection Conditions
	ProA Capture
	Agylycosylation (Caliper LabChip)
	Homogeneity/Charge heterogeneity (IEX/cIEF/SEC)
	Low-Temperature Stability

Save Lab Results to Genedata Reject New Lab Results

Genedata Biologics major workflow



Genedata Biologics Entities in Antibody Screening



Screening Campaigns (SC)

The screenshot shows the BioMedicine Design platform interface. Key sections include:

- Target Products:** A table showing 1 out of 258 target products, with one row (TPP-6986) highlighted.
- Plasmid Report:** Shows 339 Plasmids.
- Actual Products:** Shows 26 Actual Products.
- Production Datasets:** Shows 35 Production Datasets.
- CLD Campaign:** Shows 1 CLD Campaign.
- Variable Regions:** Shows 25 Variable Regions.
- Sequence Processing Runs:** Shows no data.
- Molecule Workspace:** Shows 1 Molecule Workspace.
- Screening Campaigns:** Shows 27 Screening Campaigns, with a red box highlighting the "Create" button.

Details

Name	BMD Science Day Workshop
Description	Demo
Antibody Library *	LIB-1 (GBT Human Reference Sequences)
Status	Active
Status Comment	
Start Date	YYYY-MM-DD
Projected End Date	YYYY-MM-DD
Actual End Date	YYYY-MM-DD
Responsible Person	Yinfeng Zhang
ELN	

Additional Information

11 Antibody Libraries

ID	Name	Description	Active	Reference Library Type	Antibody Library Code
LIB-1	GBT Human Reference Sequences		Yes	Antibody Variable Region	GBTHU
LIB-2	GBT Mouse Reference Set	Mouse germline J segment combinations	Yes	Antibody Variable Region	GBTM
LIB-3	Chicken		Yes	Antibody Variable Region	CHK
LIB-4	Rat		Yes	Antibody Variable Region	RAT
LIB-5	BMD Human Reference Sequences (Updated)	Revised set of germline assemblies based on IMGT 10/2016	No	Antibody Variable Region	HUIMG
LIB-6	Llama	Llama VH germline sequences from IMGT	Yes	Antibody Variable Region	LLAMA

- SC must be associated with an Antibody Library
- Antibody Library a set of reference sequence (amino acid) based on the germlines from a species
- Incoming sequences will be compared with the reference sequences for annotation
- Separated SCs are needed for different Antibody Libraries/species
- Carefully evaluate the number of SCs in a single project

PRI 2541 Reference Sequences

ID	Name
REF-5638	hulGHV7-81*01_IGHJ4*01,02,03
REF-5637	hulGHV7-81*01_IGHJ6*04
REF-5636	hulGHV7-81*01_IGHJ6*03
REF-5635	hulGHV7-81*01_IGHJ6*01,02
REF-5634	hulGHV7-81*01_IGHJ5*02
REF-5633	hulGHV7-81*01_IGHJ5*01
REF-5632	hulGHV7-81*01_IGHJ3*02
REF-5631	hulGHV7-81*01_IGHJ3*01



Clone Pool (CP)

The meaning of the clone pools varies for different approaches:

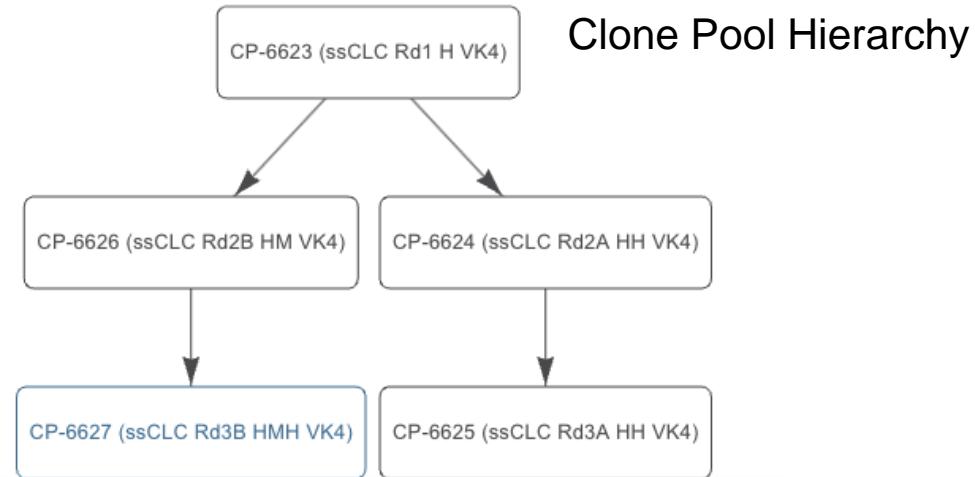
- B-cell cloning: each clone pool can represent a set of cells from a donor or animal
- Hybridoma: each clone pool can represent a fusion between isolated B cells and immortal myeloma cell
- Phage & Yeast display: each clone pool can represent a selection arm, selection round, or selection techniques

Create Clone Pool for SC-1398 (BMD Science Day Workshop)

Note
It is then added to SC-1398 (BMD Science Day Workshop).

Details

Name *	CLC Rd2 BSA
Description	Demo Purpose
Display Type *	B-Cell
Selection Round	CHO
Species	Hybridoma
Parent Clone Pool	mRNA
ELN	Phage
Additional Information	Ribosome
	Yeast



Complicated Phage Display with multiple selection arms

PRJ-482 > Screening Campaign SC-1400 (Targeted SMART IL17 Library)

Details

ID	SC-1400
Name	Targeted SMART IL17 Library
Description	Targeted SMART IL17 Library
Antibody Library	LIB-1 (GBT Human Reference Sequences)
Show empty properties	

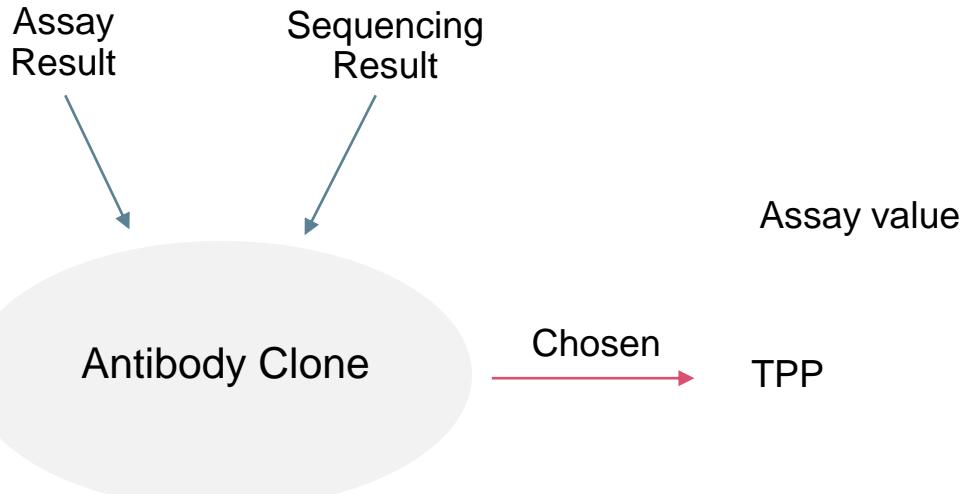
Clone Pool Bulk Upload Utility

Register
Registration
Modify
Last Modified
User

Create Mix and Match TPPs
Create Split Plates
Launch Hybridoma Clone Analysis
Master Clone Export
Sequence Importer
Create Clones from Pairing File

Antibody Clone

scFv
VHH
IgG
IgG-LC
sFab
IgG-HC
Fab-on-Phage
Single Chain Non-Ab
Fab (IgG1)
hgG1
IgG BiSpec(K-in-H)
IgG BiSpec(K-in-H) HC-Hole
IgG BiSpec(K-in-H) HC-Knob
IgG BiSpec(K-in-H) LC
mIgG1
scFv (VH-3xG4S-VL)
scFv (VH-4xG4S-VL)
scFv (VL-3xG4S-VH)
scFv (VL-4xG4S-VH)
sdAb

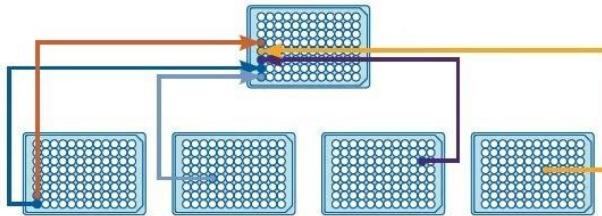


Individual isolates with global unique ID: CL-XXX and unique name

re-streak → Child Antibody Clone

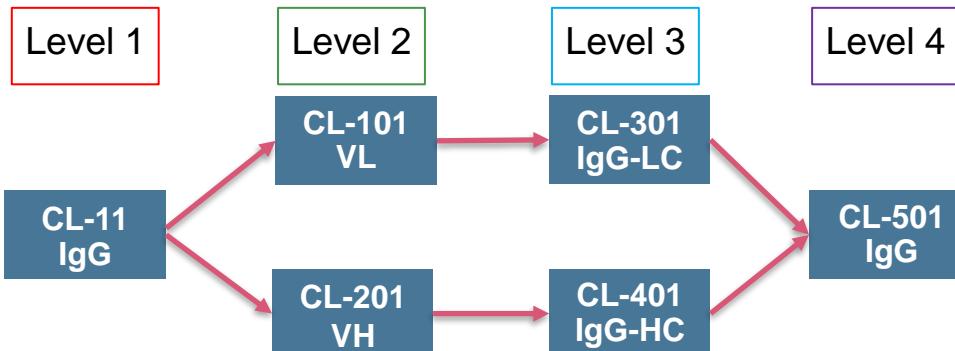
Cherry-pick

Transfer among plates

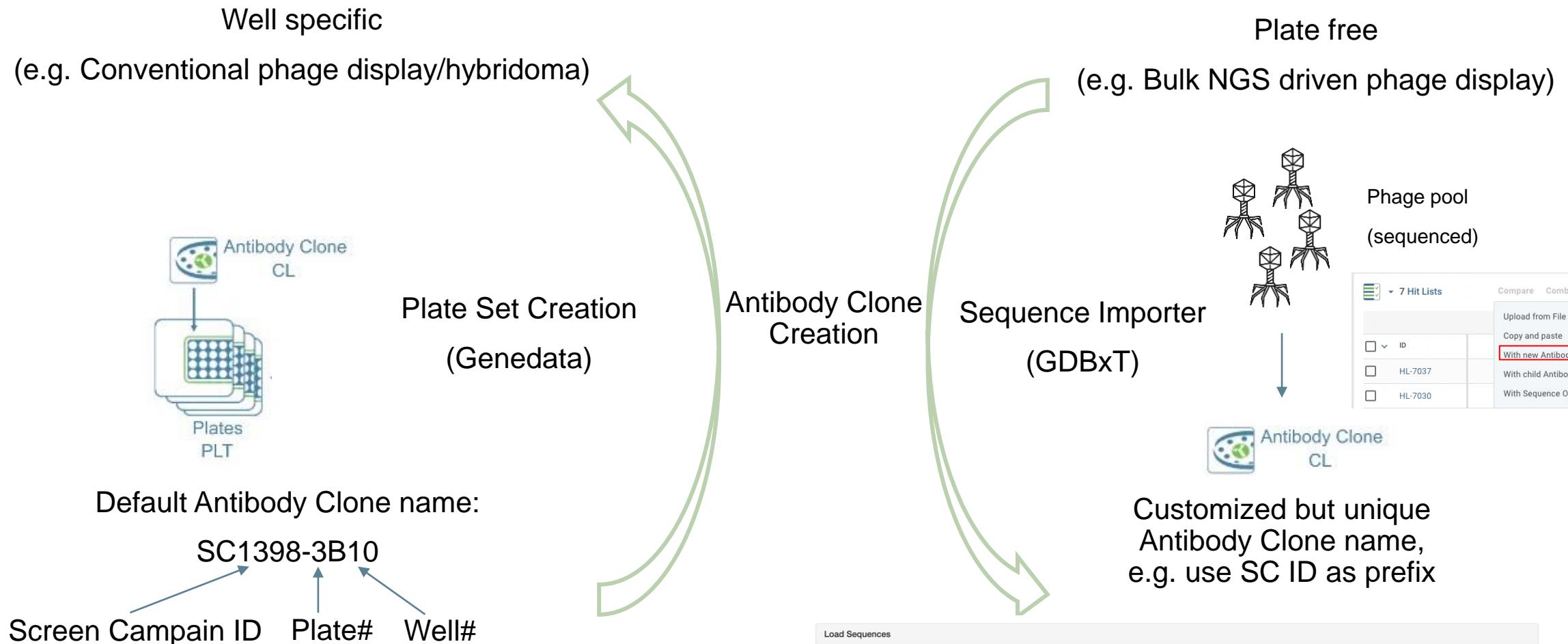


3 Antibody Clones in Hierarchy											Campaign ID	Project ID	Registered By
ID	Name	Parent Antibody Clone ID	Parent Antibody Clone Name	Relationship Type	Relationship Status	Target Product ID	Target Product Name	TPP Relationship Type	Hierarchy Level	Campaign ID	Project ID	Registered By	
CL-2789508	sc1378_clone60_context_2_pm_L_L92_E_index310-2	CL-2781533	sc1378_clone60_context_2_pm_L_L92_E_index310	Subcloning	Expected	TPP-111885	GBT-IL17-GMCSF-0778	Manually Linked	2	SC-1378	PRJ-482	Oliver Ho	
CL-2789501	sc1378_clone60_context_2_pm_L_L92_E_index310-1	CL-2781533	sc1378_clone60_context_2_pm_L_L92_E_index310	Subcloning	Expected				2	SC-1378	PRJ-482	Oliver Ho	
CL-2781533	sc1378_clone60_context_2_pm_L_L92_E_index310								1	SC-1378	PRJ-482	Nicholas Marze	

6 Assay Values											
Assay Run ID	Assay Run Name	Assay Type	Screening Stage	Campaign ID	Well Address	Plate ID	Plate Name	Antigen Name	Antigen Material Name	Attribute Name	Value
AR-2110	TSR 939 Fusion Tomato Primary Screen	Simple ELISA for Hybridoma	Primary	SC-832	E19	PLT-30827	SC-832-A-073	CXCL16_1	Human CXCL16	B	56212.6250
AR-2110	TSR 939 Fusion Tomato Primary Screen	Simple ELISA for Hybridoma	Primary	SC-832	E19	PLT-30827	SC-832-A-073	CXCL16_1	Human CXCL16	S	78972.0000
AR-2110	TSR 939 Fusion Tomato Primary Screen	Simple ELISA for Hybridoma	Primary	SC-832	E19	PLT-30827	SC-832-A-073	CXCL16_1	Human CXCL16	S-B	22759.3750



Create Antibody Clone



Hit List (HL)

- Hit List is created to manage selected clones, e.g., the best antibody clones discovered
- Clones received from an external source can be registered via hit list
- Antibody clone hits can be selected in multiple ways, such as selecting by assay run data, sequence data or uploading a file

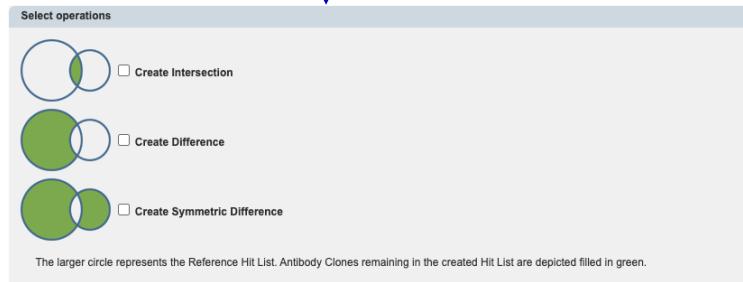
From Redundancy analysis table
Upload a file with Antibody Clone ID/names
From Assay Results table

Antibody Clones selection

New Hit List

Antibody Clone					Source
ID	Name	Constant Region ID	Antibody Library ID	Registered By	
CL-2789917	sc1390_205A_024_ECO-232-16-Kap8_pTT5-FWD_H03.ab1Kap	CON-34	LIB-2	David Fruhling	
CL-2789916	sc1390_205A_023_ECO-232-16-Kap7_pTT5-FWD_G03.ab1Kap	CON-34	LIB-2	David Fruhling	
CL-2789915	sc1390_205A_022_ECO-232-16-Kap6_pTT5-FWD_F03.ab1Kap	CON-34	LIB-2	David Fruhling	

ID	Name	Category	Screening Stage	Number of Antibody Clones	Registered By
HL-6980	Igg conversion via PCR from glycerol stock			31	Jessica Min-DeBartolo
HL-6979	Igg conversion via eblock			30	Jessica Min-DeBartolo
HL-6978	Nanopore_pAP5	Master Clone List		156	Jonathan McDaniel



Well-specific Antibody Clone creation

PRJ-1 > Screening Campaign SC-1398 (BMD Science Day Workshop)

Create (highlighted with a red box)

From Clone Pool

- Via Colony Picking report
- Via Well Layout Map
- QPix 2XT Colony Picker
- QPix 2XT Colony Picker (Trays with 4 Regions)
- Via Cell Sorting Report
- Via Multidrop LHS Report
- Via Plate Barcode/Well Address
- Via Re-Array LHS Report
- Via Re-Array LHS Report (V2)
- QPix Rearray Report

Plate Set Details

Name: Workshop_createPS
 Description:
 Screening Stage: ELN
 Additional Information:

Registration Details

Antibody Library: LIB-1 (GBT Human Reference Sequences)
 Number of Plates *: 2 (highlighted with a red box)

Clone Pool Selection

For each selected Clone Pool an equal number of Plates will be created.

1 Clone Pool

ID	Name	Type	Description	Display Type	Display Library Name	Display Library Description	Display ELN	Selection Arm	Selection Technique	Selection Round	Antigen ID	Antigen Name	Antigen Material ID	Antigen Material Name	Antigen Concentration	Antigen Amount	Antigen Volume	Antigen Role	Hitrate [%]	Input Titer [phages per ml.]	Output Titer [cfu per total volume]	ELN	Agar Plate Barcodes	Animal Identifier	Species	Serum Titer [U/mL]	Tissue Type	Parent Antibody Clone ID	
CP-6720	CLC Rd2 BSA	Sample	Demo purpose	Phage																									

Plate Details

Type: Master Plate
 Plate Format *: 96 (highlighted with a red box)
 Plate Layout *: Standard 88 (highlighted with a red box)

Antibody Clone Details

Format *: IgG (highlighted with a red box)
 Category:

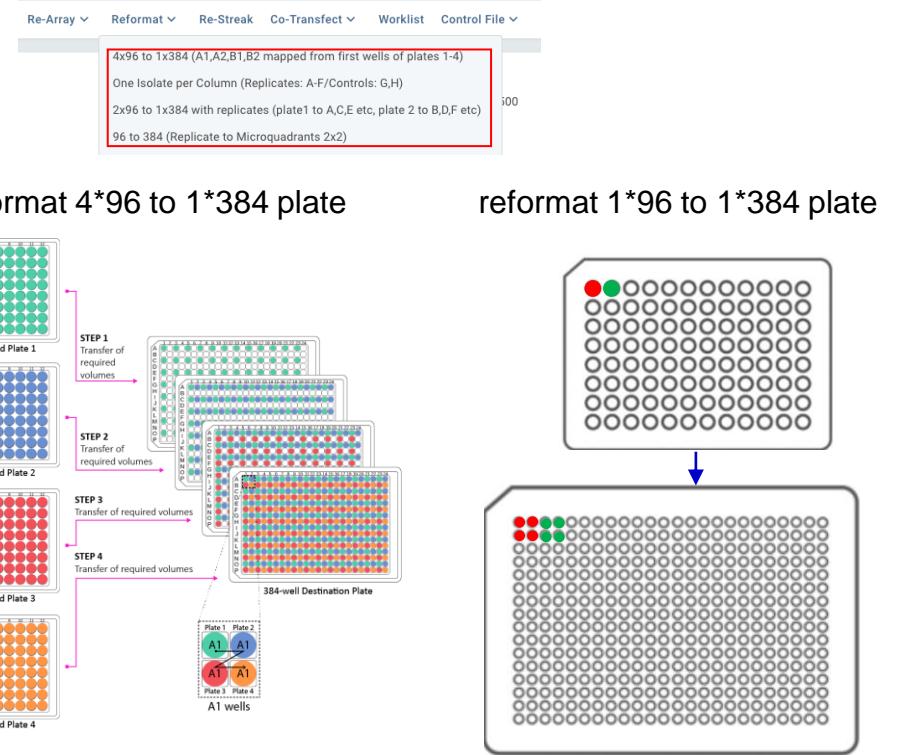
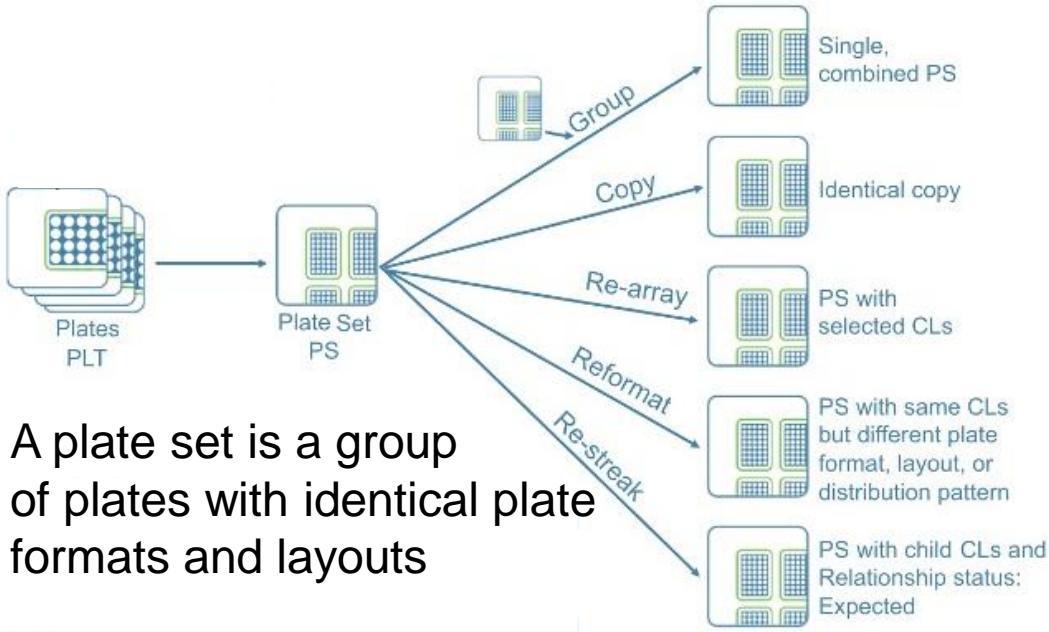
2 Plates

ID	Name	Type	Plate Format	Plate Layout	Registered By
PLT-38719	SC-1398-M-005	Master Plate	96	Standard 88	Yinfeng Zhang
PLT-38718	SC-1398-M-004	Master Plate	96	Standard 88	Yinfeng Zhang

176 Well Contents

ID	Name	Format	Plate ID	Plate Name	Well Address	Clone Pool ID	Clone Pool Name	Clone Pool Type	Antibody Library Name	Campaign ID	Project ID	Registered By
CL-2801408	SC1398-5H11	IgG	PLT-38719	SC-1398-M-005	H11	CP-6720	CLC Rd2 BSA	Sample	GBT Human Reference Sequences	SC-1398	PRJ-1	Yinfeng Zhang
CL-2801407	SC1398-5G11	IgG	PLT-38719	SC-1398-M-005	G11	CP-6720	CLC Rd2 BSA	Sample	GBT Human Reference Sequences	SC-1398	PRJ-1	Yinfeng Zhang
CL-2801406	SC1398-5F11	IgG	PLT-38719	SC-1398-M-005	F11	CP-6720	CLC Rd2 BSA	Sample	GBT Human Reference Sequences	SC-1398	PRJ-1	Yinfeng Zhang

Plate (PLT) and Plate Set (PS)



Predefined plate layout

Plate Layout 96 A1Pos B1 to H1 Blank															
Plate Layout															
A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11	A12				
B01	B02	B03	B04	B05	B06	B07	B08	B09	B10	B11	B12				
C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12				
D01	D02	D03	D04	D05	D06	D07	D08	D09	D10	D11	D12				
E01	E02	E03	E04	E05	E06	E07	E08	E09	E10	E11	E12				
F01	F02	F03	F04	F05	F06	F07	F08	F09	F10	F11	F12				
G01	G02	G03	G04	G05	G06	G07	G08	G09	G10	G11	G12				
H01	H02	H03	H04	H05	H06	H07	H08	H09	H10	H11	H12				

Clone Positive Control 1* Positive Control 2* Negative Control 2* Blank* Negative Control 3* Negative Control 4* Positive Control 3* Positive Control 4* Reserved* (*=reserved)

Plate Layout GBT 96 Well 8 Controls															
Plate Layout															
A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11	A12	A13	A14	A15	A16
B01	B02	B03	B04	B05	B06	B07	B08	B09	B10	B11	B12	B13	B14	B15	B16
C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15	C16
D01	D02	D03	D04	D05	D06	D07	D08	D09	D10	D11	D12	D13	D14	D15	D16
E01	E02	E03	E04	E05	E06	E07	E08	E09	E10	E11	E12	E13	E14	E15	E16
F01	F02	F03	F04	F05	F06	F07	F08	F09	F10	F11	F12	F13	F14	F15	F16
G01	G02	G03	G04	G05	G06	G07	G08	G09	G10	G11	G12	G13	G14	G15	G16
H01	H02	H03	H04	H05	H06	H07	H08	H09	H10	H11	H12	H13	H14	H15	H16

Clone Positive Control 1* Positive Control 2* Negative Control 2* Blank* Negative Control 3* Negative Control 4* Positive Control 3* Positive Control 4* Reserved* (*=reserved)

Plate Layout GBT 384 Well 8 Controls															
Plate Layout															
A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11	A12	A13	A14	A15	A16
B01	B02	B03	B04	B05	B06	B07	B08	B09	B10	B11	B12	B13	B14	B15	B16
C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15	C16
D01	D02	D03	D04	D05	D06	D07	D08	D09	D10	D11	D12	D13	D14	D15	D16
E01	E02	E03	E04	E05	E06	E07	E08	E09	E10	E11	E12	E13	E14	E15	E16
F01	F02	F03	F04	F05	F06	F07	F08	F09	F10	F11	F12	F13	F14	F15	F16
G01	G02	G03	G04	G05	G06	G07	G08	G09	G10	G11	G12	G13	G14	G15	G16
H01	H02	H03	H04	H05	H06	H07	H08	H09	H10	H11	H12	H13	H14	H15	H16
I01	I02	I03	I04	I05	I06	I07	I08	I09	I10	I11	I12	I13	I14	I15	I16
J01	J02	J03	J04	J05	J06	J07	J08	J09	J10	J11	J12	J13	J14	J15	J16
K01	K02	K03	K04	K05	K06	K07	K08	K09	K10	K11	K12	K13	K14	K15	K16
L01	L02	L03	L04	L05	L06	L07	L08	L09	L10	L11	L12	L13	L14	L15	L16
M01	M02	M03	M04	M05	M06	M07	M08	M09	M10	M11	M12	M13	M14	M15	M16
N01	N02	N03	N04	N05	N06	N07	N08	N09	N10	N11	N12	N13	N14	N15	N16
O01	O02	O03	O04	O05	O06	O07	O08	O09	O10	O11	O12	O13	O14	O15	O16
P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	P13	P14	P15	P16

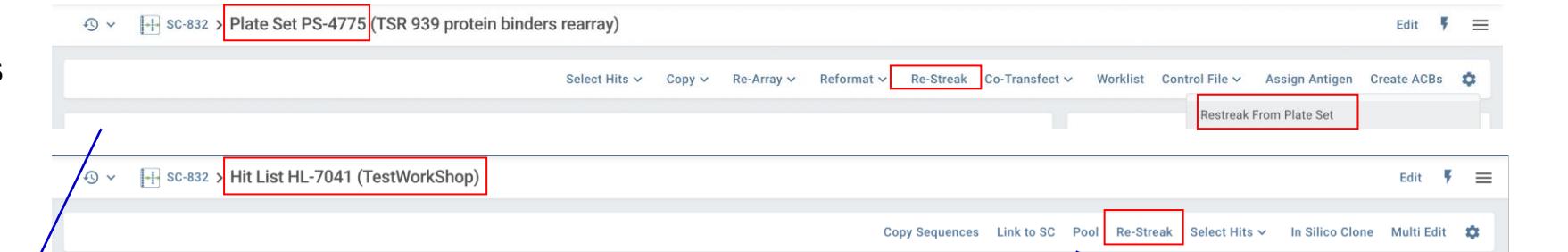
Re-streak Antibody Clones

11 Plate Types

From Plate Sets

- Label
- Assay Plate
- Compression Plate
- Consolidation Plate
- Daughter Plate
- DNA
- Expression Plate
- Master Plate
- PCR Plate
- Re-Array Plate
- Sequencing Plate
- Unique Plate

From Hit List



The screenshot shows the GDBxT software interface with two main tabs: 'Plate Set PS-4775 (TSR 939 protein binders rearray)' and 'Hit List HL-7041 (TestWorkShop)'. Both tabs feature a toolbar with various options like 'Select Hits', 'Copy', 'Re-Array', 'Reformat', 'Re-Streak', 'Co-Transfect', 'Worklist', 'Control File', 'Assign Antigen', 'Create ACBs', and a settings gear icon. The 'Re-Streak' button is explicitly highlighted with a red box in both toolbars.

GDBxT

Set up Restreak for PlateSet PS-4775

Number of restreaks

Check for columnwise (e.g. A1->A1,B1,C1...)

Parent is split heavy/light

Keep clones from different parent plates on different child plates

	A	B	C	D	E	F	G	H
0	RestreakPlate-15947	1	GDP-0016173	A	1			
0	RestreakPlate-15947	1	GDP-0016173	B	1			
0	RestreakPlate-15947	1	GDP-0016173	C	1			
0	RestreakPlate-15947	1	GDP-0016173	D	1			
0	RestreakPlate-15947	1	GDP-0016173	E	1			
0	RestreakPlate-15947	1	GDP-0016173	F	1			
0	RestreakPlate-15947	1	GDP-0016173	G	1			
0	RestreakPlate-15947	1	GDP-0016173	H	1			

Children antibody clones will be arranged in new plates (plate sets)

Name of Parent Antibody Clone SC1339-93D04

Default name for children
Antibody Clones SC1339-93D04-1
SC1339-93D04-2

Create a Re-Streaking Plate Set

The Plates for the Plate Set are automatically generated.

Plate Set Details

Name: Restreak_demo
Description:
Screening Stage:
ELN:

Re-Streaking Details

Number of Re-Streaks *

Plate Details

Type *: Master Plate
Plate Format *: 96
Plate Layout *: Standard 88
Filling Pattern *: Please Choose
Fill column-wise (A1, B1, C1, ...)
Fill row-wise (A1, A2, A3, ...)

Antibody Clone Details

Format *: IgG
Category:

Antibody Clone Batch Details

Antibody Clone Batch Processing *: None
Do not generate the Antibody Clone Batch for each well on the created Plate(s)



Link Antibody Clones in Genedata with sequencing data

The Key is the Antibody Clone name

Create a plate in Genedata for sequencing purpose

Screenshot of the Genedata interface showing a plate setup for sequencing:

ID	Name	Barcode	Type	Plate Format	Plate Layout	Registered By
PLT-38760	SC-1371-N-002	RestreakPlate-15947	DNA	96	All filled	Oliver Ho

Selected Plates: PLT-38760

Vendor: MWG

Primer: pW1-InsAmp_F

Filename: Workshop_Order

Download Order

Right sidebar options:

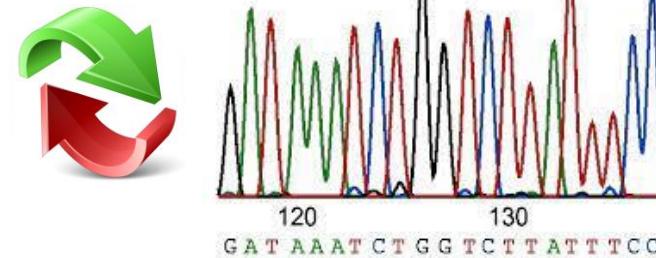
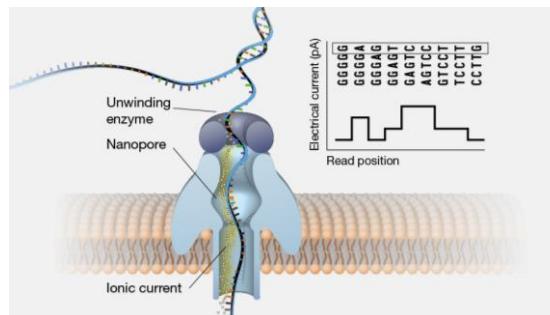
- Get Barcode Names
- Plate View
- Group
- Create GATC Sequence Request File
- Create SeqTech Sequence Request File
- Plate Sequencing Order Form** (highlighted)
- Align PLT sequences
- Print labels

PlateSeq Service Upload Form

eurofins Genomics

Well Position	Sample Name	Primer 1	Sequence to synthesize or Barcode for enclosed primers	Primer 2	Sequence to synthesize or Barcode for enclosed primers	Primer 3	Sequence to synthesize or Barcode for enclosed primers	Primer 4	Sequence to synthesize or Barcode for enclosed primers
A1	SC1371-1B06-2-1	pW1-InsAmp_F							
B1	SC1371-1B06-2-2	pW1-InsAmp_F							
C1	SC1371-1B10-1-1	pW1-InsAmp_F							
D1	SC1371-1B10-1-2	pW1-InsAmp_F							
E1	SC1371-1B10-2-1	pW1-InsAmp_F							
F1	SC1371-1B10-2-2	pW1-InsAmp_F							
G1	SC1371-1H05-1-1	pW1-InsAmp_F							
H1	SC1371-1H05-1-2	pW1-InsAmp_F							

Replacing external Sanger sequencing to Internal Nanopore sequencing



Sequence Import via Sequencing Run (SR)

- The sequences from either vendor or in house facility need to be imported into Genedata Biologics and linked with the antibody clones
- Each antibody clone may have two chains: VH and VL OR one chain: scFv
- VH and VL can be in a same Fasta file or separated into two files: one for VH and one for VL
- A series of bioinformatics processing steps will be performed during Sequencing Run creation (Protein type specific)
- Limitation: Antibody Clone must exist in Genedata to allow sequence upload

Initial Settings

Please select the Sequencing Provider and the optional Hit List.

The Fasta file(s) must follow a defined clone naming scheme in each Fasta header for the selected Sequencing Provider. If selected, then the Hit List should contain all Antibody Clones used for obtaining the sequences contained in the Fasta file(s).

Sequencing Provider * Parse fasta files with headers containing only the clone names

Hit List

Fasta File Upload

Import the Fasta File(s) containing the sequences to be assigned to the Antibody Clones.

Only one Fasta file can be uploaded at a time. This step can be repeated multiple times.

Chain Information to be set for all sequences in the file Parse from Fasta headers

Import...

scFv
VL
VH

Processing

Force as Master Sequence Low Quality Sequence Processing

Statistics on Import

Last Sum	Uploaded Files
Uploaded sequences 6 6	Workshop_SR_Both_Chain.txt
Assigned as scFv 0 0	
Assigned as VL 2 2	
Assigned as VH 3 3	
Unassigned sequences 1 1	
Duplicate assignment as scFv 0 0	
Duplicate assignment as VL 0 0	
Duplicate assignment as VH 0 0	
Antibody Clones with incomplete sequence assignment 1	
Antibody Clones with Master Sequences from previous Sequencing Runs 0	

Sequence file

ID	Status	Process	Description	Errors	Warnings
1	Finished	Translation / Framework Recognition / Reference Typing	Translate DNA sequences in all six reading frames. Recognize and assign framework features to protein sequences, according to the framework regions of the identified best matching Reference Sequence.	0	0
2	Finished	Low Quality Sequences: Translation / Framework Recognition / Reference Typing	Optionally handle sequences with missing or unidentifiable Framework regions and/or CDRs in the same reading frame (low quality DNA sequences). Translate DNA sequences in all six reading frames. Recognize and assign Framework features to protein sequences for low quality sequences (i.e. FW3/FW4), according to the Framework regions of the identified best matching Reference Sequence. The percent identity of each of the four Framework regions must meet the threshold criteria, set separately for each ...	0	0
3	Finished	Constant Region Identification	Compare protein sequences with all registered Constant Regions in the system. Take the best match above a given threshold and annotate it as C_region feature.	0	134

Sequence importer in GDBxT

Details

ID: SC-1398
Name: BMD Science Day Workshop
Description: Demo
Antibody Library: LIB-1 (GBT Human Reference Sequences)
Status: Active
Responsible Person: Yinfeng Zhang
[Show empty properties](#)

Registered By: Yinfeng Zhang
Registration Date: 2023-Sep-07 12:03:30 -0400
Modified By:
Last Modified Date:
User Groups: (no restrictions)

[Clone Pool Bulk Upload Utility](#)
[Create Mix and Match TPPs](#)
[Create Split Plates](#)
[Launch Hybridoma Clone Analysis](#)
[Master Clone Export](#)
[Sequence Importer](#)
[Create Clone: Sequence Importer](#)

Loading

Load Sequences

Sequences: [Choose File](#) [Upload_by_Si.fasta](#)

Header Parser:

Chain Type: VL
 VH
 scFv
 Autodetect

Import Mode: to new clones
 to existing clones
 both allowed

Clone name manipulators:
Add Prefix:
Find:
[Load Sequences](#)

Editing

Edit Sequence Names

Clone Name	Clone Id	Chain	Parsed Name	Sequence	Length	Ambiguity Counts	Header	Source
1 WorshopTest-1		VH	WorshopTest-1	TTATCCCTACAGCCGGCTTTCCGGT	859		WorshopTest-1_VH	Upload_by_Si.fasta
2 WorshopTest-1		VL	WorshopTest-1	GGGCAGAAGTCCTCTCAGTCAGGA	897		WorshopTest-1_VL	Upload_by_Si.fasta
3 WorshopTest-2		VH	WorshopTest-2	CCCCCCCCCCCCCCCCCGCCGCG	1089		WorshopTest-2_VH	Upload_by_Si.fasta
4 WorshopTest-2		VL	WorshopTest-2	AGGAGTCAGTCAGTCAGCACAA	728		WorshopTest-2_VL	Upload_by_Si.fasta
5 WorshopTest-3		VH	WorshopTest-3	AGCTCTGAGAGAGAGGCCAGCCCT	770		WorshopTest-3_VH	Upload_by_Si.fasta
6 WorshopTest-3		VL	WorshopTest-3	GCATGTCCTCCAGCTGCCCTACCC	757		WorshopTest-3_VL	Upload_by_Si.fasta
7 SC1398-3B04	CL-2801117	VH	SC1398-3B04	AGCTCTGAGAGAGAGGCCAGCCCT	834		SC1398-3B04_VH	Upload_by_Si.fasta
8 SC1398-3B04	CL-2801117	VL	SC1398-3B04	GCATGTCCTCCAGCTGCCCTACCC	837		SC1398-3B04_VL	Upload_by_Si.fasta

Clone name manipulators:
Add Prefix:
Find:
[Apply to selected](#) [Select all](#) [Delete selected](#)

Importing

Import Sequences

Sequencing Run: your sequences will be uploaded into this entity

Sequencing Run Name: Force as Master Sequence Low Quality Sequence Processing

Description:

Hit List: this will be created if there are new clones

Hit List Name: Match Sequencing Run Name Ab Format: Clone Pool ID:

Description:
 Match Sequencing Run Description

Username:

[Import Sequences to Genedata](#) [Download Fasta](#) [Delete Entities](#)

- Fasta file handling**
 - Tool parses fasta headers to extract clone names
 - Accept zip file as input
 - Optionally merge multiple fasta files into a single file
- Clone name verification or create new clones**
 - Verify if a clone name is already registered in Genedata
 - Assists in renaming clones
 - Preview provided before Hit List and/or Sequencing Run creation
- Hit List and Sequencing Run creation**
 - After editing clone names, the tool can create a Hit List for new clones and a Sequencing Run

Redundancy Analysis (RA)

- Redundancy Analysis can be performed in whole Screen Campaign or a defined Hit List
- Each predefined criterion will have a corresponding RA for screening
- Sequences from Variable Regions, CDRS and their combinations will be clustered to identify redundant sequences
- Representative sequence can be set in each sub-group

The screenshot displays the Redundancy Analysis (RA) interface. It shows three main sections:

- 13 Redundancy Analyses filtered to Antibody Clones from this Sequencing Run:**

ID	Identity Criterion	Number of Groups	Number of Representative Antibody Clones
RA-11693	VL region + VH region	61	61
RA-11692	VL region	4	4
RA-11691	VL CDRs	4	4
RA-11690	VH region	61	61
- 61 Redundancy Groups:**

ID	Group Number	Number of Antibody Clones	Number of Representatives
GRP-956836	61	1	1
GRP-956835	60	1	1
- 39 (out of 56) Antibody Clones:**

ID	Name	Representative	Framework Mutations	Clone Pool Type	Sequencing Run Name	Campaign ID	Project ID
CL-2781994	SC1371-6A01	Yes	1	Sample	VEGFR3_pAP5_ONP	SC-1371	PRJ-425
CL-2782267	SC1371-8B12	No	1	Sample	VEGFR3_pAP5_ONP	SC-1371	PRJ-425

The screenshot shows the antibody clone management interface. It displays a table of 269 antibody clones with the following columns:

ID	Name	Representative	Group Number	Parent Antibody Clone ID	Parent Antibody Clone Name	Relationship Type	Relationship Status	Framework Mutations	Antibody Library Name	Sequer
Select all rows	71-2	No	51	CL-2782258	SC1371-8A11	NGS Sequencing	Expected	0	GBT Human Reference Sequences	VEGFI
Select all on page	71-1	No	57	CL-2782258	SC1371-8A11	NGS Sequencing	Expected	1	GBT Human Reference Sequences	VEGFI
Unselect all	71-2	No	42	CL-2782144	SC1371-7C08	NGS Sequencing	Expected	0	GBT Human Reference Sequences	VEGFI
Invert selection	71-1	No	39	CL-2782144	SC1371-7C08	NGS Sequencing	Expected	2	GBT Human Reference Sequences	VEGFI

Key features visible in the interface include:

- A red box highlights the "Select Representatives" button.
- Checkboxes for selecting rows.
- Buttons for "Save Representatives", "Create Hit List", "Web Protein Analyzer", and "Web DNA Analyzer".

The screenshot displays two sequence alignment tools:

- Protein sequence aligner:** Shows a multiple sequence alignment of 8 protein sequences. The sequences are color-coded by residue type, and a legend at the top right defines the colors for amino acids.
- DNA sequence aligner:** Shows a multiple sequence alignment of 8 DNA sequences. Similar to the protein aligner, it uses color-coding for nucleotides and includes a search bar for sequence residues.



Assay Run

- Assay run contains a set of assay values measured during an experiment
- The experiment and its attributes are configured in the Measurement Type
- Similar to Laboratory Results but for each Antibody Clone
- Values used for identify hits and decision make

The screenshot shows a software application with a navigation bar on the left and a main content area. The navigation bar includes 'Resources' and 'Admin' dropdowns. The main content area displays a table titled 'Measurement Types' with 9 entries out of 151. Each entry includes fields for Name, Description, Active status, Laboratory Analysis Type, and various configuration flags. Below this table is another table titled 'Measurement Attribute' showing detailed settings for specific measurement types like ELISA and HTRF.

Measurement Types									Create
	Name	Description	Active	Laboratory Analysis Type	For Assay Runs	For Measurement Runs	For Laboratory Results	Require Antigen	Assay Data Format
	Biacore KD	Biacore Kinetics with pH	Yes	Analytic	Yes	No	Yes	Yes	Generic Column File (Example Implementation) (version 2), Generic column-based Plate Assay Adapter
	ELISA	Enzyme-Linked Immunosorbent Assay	Yes	Analytic	Yes	No	Yes	Yes	Generic Column File (Example Implementation), Generic Plate View (Example Implementation), Generic Plate View (Example Implementation) (version 2), Generic Plate View with multiple antigens (Example Implementation), Generic column-wise with multiple antigens, Molecular Devices (tab-delimited, comma as decimal separator), External Database Upload, Generic Column File (Example Implementation) (version 2), Generic column-based format with entity id or plate-well information, Generic column-based PI ...
	FLIPR	Fluorometric Imaging Plate Reader	Yes	Assay	Yes	No	No	Yes	Generic Column File (Example Implementation), Generic Plate View (Example Implementation), Generic Plate View (Example Implementation) (version 2), Generic Plate View with multiple antigens (Example Implementation), Generic column-wise with multiple antigens, External Database Upload, Generic Column File (Example Implementation) (version 2), Generic column-based Plate Assay Adapter, Generic column-based Plate Assay Adapter with multiple antigens, Generic column-wise with multiple antigens (versi ...
	FMAT	Fluorometric Microvolume Assay Technology	Yes	Assay	Yes	No	Yes	Yes	Generic Column File (Example Implementation), Generic Plate View (Example Implementation), Generic Plate View (Example Implementation) (version 2), Generic Plate View with multiple antigens (Example Implementation), Generic column-wise with multiple antigens, External Database Upload, Generic Column File (Example Implementation) (version 2), Generic column-based format with entity id or plate-well information, Generic column-based Plate Assay Adapter, Generic column-based Plate Assay Adapter wit ...
	GBT ELISA	create (GBT) ELISA Assay Run in System	Yes						
	GBT HTRF	create (GBT) HTRF Assay Run in System	Yes						

Measurement Attribute							
	Measurement Attribute	Description	Type	Sort Order	Active	Mandatory	Initially Visible
	S	Signal (absorbance at 450nm)	Numeric	10	Yes	Yes	Yes
	B	Background (Absorbance)	Numeric	20	Yes	Yes	Yes
	S/B	Signal to background ratio	Numeric	30	Yes	Yes	Yes
	S-B	Signal Minus Blank	Numeric	40	Yes	Yes	Yes
	Pos1C	Positive Control 1	Numeric	50	Yes	Yes	Yes
	Pos2C	Positive Control 2	Numeric	60	Yes	No	Yes
	NegC	Negative Control	Numeric	70	Yes	Yes	Yes
	%Pos1C	Percent Positive Control 1	Numeric	80	Yes	Yes	Yes
	%Pos2C	Percent Positive Control 2	Numeric	90	Yes	No	Yes

Upload result to Assay Run

Create an Assay Run for Screening Campaign SC-72

Step 1 of 4

Assay Run Details

Please select the Assay. Details of possible measurements for an Assay can be found in the [Assay Attributes Documentation](#).

Assay Type * GBT ELISA
create (GBT) ELISA Assay Run in System

Assay Data Format * Envision ELISA
Import Assay Data from tsv Envision ELISA output file.

Antigen * AG-111 [TPP-1747 (Mu ADAMTS-2)]

Antigen Material



Create an Assay Run for Screening Campaign SC-72

Step 2 of 4

Assay Run Details

Please select the Plate Set:

Plate Set * PS-1061 (Reformat PS-1060 (Test For Assay upload 4 Plate))

File Upload

Import a collection of assay data to create a new Assay Run.

Machine readout

Plate Information

Plate	Label	Barcode	Measured height	Chamber temperature at start	Chamber temperature at end	Humidity at start	Humidity at end	Ambient temperature at start	Ambient temperature at end
1	1	14,48	23.49	23.61	43.9	43.7	23.88	23.91	1

Background information

Plate	Label	Result	Signal	Flashes/Time	MeasTime	MeasInfo
1	Absorbance at 450	0	20186	10	00:00:00.000	De-1st Ex-Btm Em=N/A Wd=N/A

Results for Absorbance at 450(1) channel 1 (A)

Plate	Label	84	85	86	87	88	89	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
A	0.270	0.628	0.539	0.478	0.683	0.491	0.544	0.597	0.531	0.465	0.525	0.316	0.517	0.471	0.130	0.485	0.623	0.585	0.590	0.145	0.193		
B	0.469	0.472	0.435	0.369	0.379	0.364	0.396	0.523	0.198	0.336	0.383	0.493	0.583	0.319	0.465	0.454	0.389	0.872	0.534	0.462	0.124	0.116	
C	0.428	0.467	0.467	0.369	0.379	0.364	0.396	0.523	0.198	0.336	0.383	0.493	0.583	0.319	0.465	0.454	0.389	0.872	0.534	0.462	0.124	0.116	
D	0.258	0.467	0.475	0.344	0.463	0.432	0.448	0.398	0.398	0.397	0.321	0.341	0.273	0.341	0.329	0.432	0.296	0.564	0.598	0.272	0.268	0.583	0.269
E	0.395	0.434	0.212	0.262	0.432	0.456	0.683	0.387	0.312	0.299	0.242	0.239	0.681	0.339	0.318	0.462	0.283	0.873	0.522	0.487	0.447	0.491	0.583
F	0.446	0.467	0.475	0.344	0.463	0.432	0.448	0.398	0.398	0.397	0.321	0.341	0.273	0.341	0.329	0.432	0.296	0.564	0.598	0.272	0.268	0.583	0.269
G	0.162	0.535	0.592	0.429	0.449	0.474	0.574	0.486	0.528	0.557	0.578	0.426	0.383	0.398	0.383	0.126	0.481	0.493	0.419	0.586	0.289	0.633	0.864
H	0.371	0.378	0.318	0.386	0.277	0.394	0.394	0.371	0.412	0.186	0.297	0.371	0.398	0.187	0.356	0.342	0.421	0.511	0.378	0.392	0.272	0.854	0.867
I	0.437	0.467	0.475	0.344	0.463	0.432	0.448	0.398	0.398	0.397	0.321	0.341	0.273	0.341	0.329	0.432	0.296	0.564	0.598	0.272	0.268	0.583	0.269
J	0.372	0.355	0.442	0.358	0.373	0.446	0.357	0.387	0.367	0.385	0.349	0.385	0.498	0.457	0.445	0.535	0.343	0.345	1.028	0.499	0.257	0.436	0.863
K	0.528	0.482	0.472	0.510	0.426	0.530	0.564	0.446	0.396	0.457	0.439	0.428	0.467	0.077	0.338	0.484	0.507	0.251	0.062	0.477	0.433	0.537	0.068
L	0.428	0.467	0.475	0.344	0.463	0.432	0.448	0.398	0.398	0.397	0.321	0.341	0.273	0.341	0.329	0.432	0.296	0.564	0.598	0.272	0.268	0.583	0.269
M	0.485	0.053	0.584	0.491	0.485	0.466	0.548	0.556	0.419	0.081	0.396	0.486	0.247	0.396	0.454	0.391	0.495	0.119	0.398	0.486	0.522	0.891	0.219
N	0.448	0.467	0.385	0.386	0.278	0.327	0.468	0.313	0.391	0.423	0.350	0.367	0.413	0.383	0.437	0.225	0.298	0.312	0.338	0.374	0.289	0.287	
O	0.581	0.525	0.283	0.523	0.358	0.422	0.498	0.367	0.499	0.442	0.396	0.362	0.486	0.339	0.138	0.468	0.482	0.192	0.443	0.498	0.464	0.863	
P	0.366	0.357	0.325	0.426	0.253	0.399	0.324	0.364	0.287	0.288	0.305	0.369	0.343	0.221	0.321	0.375	0.118	0.497	0.206	0.461	0.863		

Assay Results for 352 Antibody Clones

Assay Results for 352 Antibody Clones

Assay Type GBT ELISA AR-246 (Test assay data from Envision uploaded) AG-172 [TPP-5423 (ADAMTS-2 (College Prep))]

Antibody Clone

Clone Pool

ID Name Format Category ID Name Type S B S/B S-B Pos1C Pos2C NegC %Pos1C %Pos2C S/NegC (Blank Corrected) S-NegC S/NegC Norm Plate NegC Deviation Timestamp

CL-352713 SC72-14H11 scFv Virtual CP-891 ADAMTS-2 R3BA Sample 0.0370 0.0080 4.6250 0.0290 0.0375 0.0380 0.0385 98.3051 96.6667 0.9508 -0.0015 0.9610 0.0233 30/09/2016 11:52:44

CL-352712 SC72-14G11 scFv Virtual CP-891 ADAMTS-2 R3BA Sample 0.0370 0.0080 4.6250 0.0290 0.0375 0.0380 0.0385 98.3051 96.6667 0.9508 -0.0015 0.9610 0.0233 30/09/2016 11:52:44

CL-352711 SC72-14F11 scFv Virtual CP-891 ADAMTS-2 R3BA Sample 0.0370 0.0080 4.6250 0.0290 0.0375 0.0380 0.0385 98.3051 96.6667 0.9508 -0.0015 0.9610 0.0233 30/09/2016 11:52:44

CL-352710 SC72-14E11 scFv Virtual CP-891 ADAMTS-2 R3BA Sample 0.0370 0.0080 4.6250 0.0290 0.0375 0.0380 0.0385 98.3051 96.6667 0.9508 -0.0015 0.9610 0.0233 30/09/2016 11:52:44

CL-352709 SC72-14D11 scFv Virtual CP-891 ADAMTS-2 R3BA Sample 0.0370 0.0080 4.6250 0.0290 0.0375 0.0380 0.0385 98.3051 96.6667 0.9508 -0.0015 0.9610 0.0233 30/09/2016 11:52:44

Variable Regions (VRs)

Details



VL

VH

Chain Details

Name hFGF-QC-CP1-9-20-G6-Pfizer-PDBD4R01-3P (VL)
Reference Sequence REF-174 (hulgkv1-39*01/1D-39*01_IGKJ4*01,02)

ID VR-8
Description for finding isotype quickly
Antibody Library LIB-1 (GBT Human Reference Sequences)
Species Human (Homo sapiens)



VL

VH

Chain Details

Name hFGF-QC-CP1-9-20-G6-Pfizer-PDBD4R01-3P (VH)
Reference Sequence REF-376 (human_VH3_37 (DEPRECATED))

Sequence Details

Length 107 AA
Sequence 1 DIQLTQSPSP LSASVGDRVT ITCRASQSI SYLNWYQQKP GKAPKLLIYA ASSLQSGVPS RFSGSGSGTD FTLTISSLQP 80
81 EDFATYYCQQ SYSTPLTFGG GTKVEIK 107

Sequence Details

Length 117 AA
Sequence 1 EVQLVESGGG VVQPGQLRL SCAASGFTFS SYAMHWVRQA PGKGLEWWAV ISYDGSNKYY ADSVKGRFTI SRDNSKNLTY 80
81 LQMNSLRAED TAVYVCARPG RGAFFDIWGQQ 117



- VH-VL pairs are highly encouraged to be registered in Genedata as VRs
- VL and VH from one VR will form 2 inserts to enable flexible in-silicon cloning, especially for bispecific antibody creation
- TPPs carrying the same VR will be grouped together
- VR is easy to be created with multiple methods:
 - From a single or multiple antibody clones
 - From Hit List
 - From FASTA amino acid file
 - From a GeneBank file
 - From existing variable regions



BioMedicine Design

Breakthroughs that change patients' lives

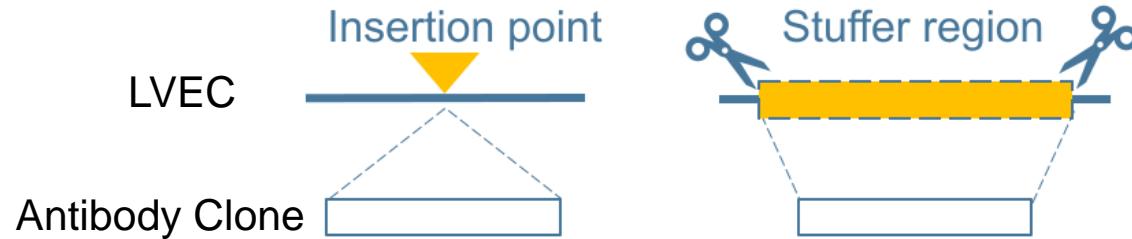
30



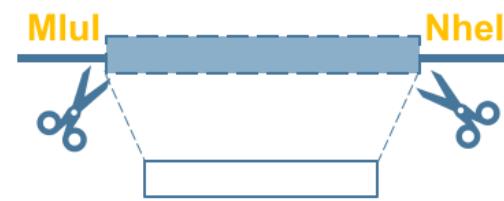
ID	Name	Format	Chain Multiplicity	Isotype	Antibody Library ID	Variable Region ID	Constant Region ID
TPP-22250	GBT-Targ-0239	IgG	1, 1	Kappa, IgG1	LIB-1	VR-8	CON-6, CON-8
TPP-19908	PharmSci-Targ-0228	IgG	1, 1	Kappa, IgG1	LIB-1	VR-8	CON-8
TPP-15000	GBT-Targ-0202	IgG-Bispecific	1, 1, 1, 1	Kappa, IgG2, IgG2, Kappa	LIB-1	VR-6, VR-8	CON-3
TPP-14647	GBT-Targ-0194	VHH-Fc One Arm	1	VHH	LIB-1	VR-8	CON-29
TPP-30	GBT-Targ-16	IgG	1, 1	Kappa, IgG1	LIB-1	VR-8	CON-3, CON-1

In-silicon cloning

Cloning with insertion markers



Cloning with restriction enzymes

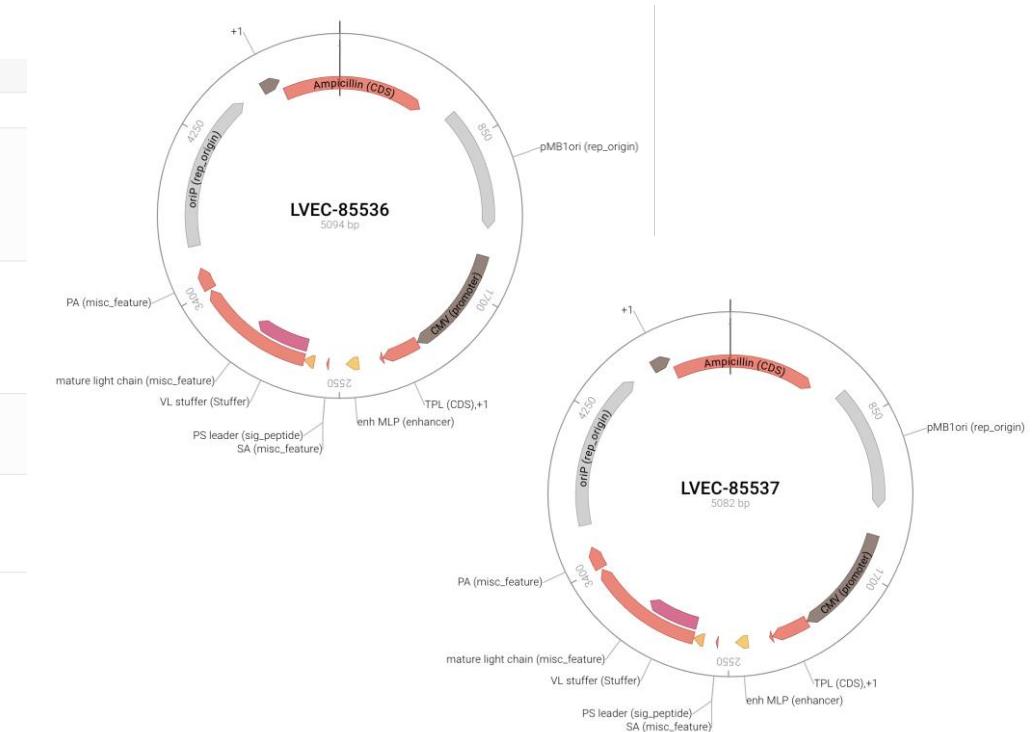


Resources ▾ Admin ▾

4 (out of 444) Backbone Expression Vectors

<input type="checkbox"/>	ID	Name	Plasmid Type	Active	TPP Format	Chain Info	Isotype	Leader Sequence ID	Leader Sequence Name	Promoter	Resistance Gene
<input type="checkbox"/>	LVEC-85537	pTT5 mu Kappa	Backbone Expression Vector (Prepared)	Yes	IgG, R or Knob Half Bispecific, E or Hole or DuoBody FtoL Half Bispecific	Light Chain	Kappa	Light Chain: LDR-3	Light Chain: PharmSci Leader GVHS		
<input type="checkbox"/>	LVEC-85536	pTT5 mu lambda	Backbone Expression Vector (Prepared)	Yes	IgG, R or Knob Half Bispecific, E or Hole or DuoBody FtoL Half Bispecific	Light Chain	Lambda	Light Chain: LDR-3	Light Chain: PharmSci Leader GVHS		
<input type="checkbox"/>	LVEC-85534	pTT5 mouse IgG1 DA FLNT	Backbone Expression Vector (Prepared)	Yes	IgG, E or Hole or DuoBody FtoL Half Bispecific	Heavy Chain	IgG1	Heavy Chain: LDR-3	Heavy Chain: PharmSci Leader GVHS	CMV	Ampicillin
<input type="checkbox"/>	LVEC-85533	pTT5 mouse IgG1 DA TKKR 6His	Backbone Expression Vector (Prepared)	Yes	IgG, R or Knob Half Bispecific	Heavy Chain	IgG1	Heavy Chain: LDR-3	Heavy Chain: PharmSci Leader GVHS	CMV	Ampicillin

Crucial to select the correct LVEC



In-silicon cloning: inside Genedata

Through Hit List

SC-1371 > Hit List HL-7058 (test1)

Model Plasmid

Please choose the relevant Backbone Expression Vectors. Available options are filtered by the Chain Isotypes extracted from the Antibody Clones: Light Chain (Lambda), Heavy Chain (Gamma).

In case of a single-vector system:

Vector for both Light and Heavy Chains

In case of a two-vector system:

Vector for Light Chain

Vector for Heavy Chain

Please specify whether or not an additional N- or C-terminal sequence replacement step is desired:

Replacement

Cloning Strategy Selection for Backbone Expression Vectors

Cloning Strategy for Light Chain *

Cloning Strategy for Heavy Chain *

Cloning Strategy Selection for Antibody Clones

Cloning Strategy for Light Chain *

Cloning Strategy for Heavy Chain *

Type and Format

Please select purpose, type and format of the Target Product.

Purpose *

Type of Product

Format *

Complexation *

Chain Multiplicity Light Chain: 1, Heavy Chain: 1



Through Variable Region

In Silico Clone Using Alternative Antibody Format

Step 1 of 6

Type and Format

Please select the Format of the Target Products.

Type of Product

Format *

Complexation *

Chain Multiplicity Light Chain 1: 1, Heavy Chain 1: 1, Heavy Chain 2: 1, Light Chain 2: 1



In Silico Clone Using Alternative Antibody Format

Step 2 of 6

Backbone Expression Vectors

Please select a Backbone Expression Vector for each Chain.

Backbone Expression Vector for Light Chain 1 *

Backbone Expression Vector for Heavy Chain 1 *

Backbone Expression Vector for Heavy Chain 2 *

Backbone Expression Vector for Light Chain 2 *



Inserts

Please select an Insert for each Cloning Site. The Insert selection is optional for Backbone Expression Vectors prepared to be translated as is. Please click on this link to [download](#) a template for uploading. Please upload a MS Excel file to populate Inserts. It is possible to upload multiple files consecutively to populate additional Inserts.

Import...

Light Chain 1 VL stuffer	Heavy Chain 1 VH stuffer	Heavy Chain 2 VH stuffer	Light Chain 2 VL stuffer
INS-36861 (sc1143_pSH1174-xhCD163-0538-)	INS-36862 (sc1143_pSH1174-xhCD163-0538-)	INS-36818 (sc1143_pSH1152-xhCD163-0538-)	INS-36817 (sc1143_pSH1152-xhCD163-0538-)
INS-36813 (sc1143_pSH1150-xhCD163-0538-)	INS-36814 (sc1143_pSH1150-xhCD163-0538-)	INS-36822 (sc1143_pSH1154-xhCD163-0538-)	INS-36821 (sc1143_pSH1154-xhCD163-0538-)

In-silicon cloning: Create Mix and Match TPPs

Details

ID: 1C1 Refinement
Name: 1C1 Refinement
Antibody Library: LIB-1 (GBT Human Reference Sequences)
[Show empty properties](#)

Clone Pools

No data.

Clone Pool Bulk Upload Utility
Create Mix and Match TPPs
Create Split Plates
Launch Hybridoma Clone Analysis
Master Clone Export
Sequence Importer
Create Clones from Pairing File

Move to GDBxT

Basic Information

Name: Test
Antibody Format: IgG
User ID: zhany691
Parent TPP (optional): Select only if applicable

Vector System Setup for Format

Number of vectors per TPP: 2
Assign Light Chain to vector: Vector 1
Assign Heavy Chain to vector: Vector 2

Select Genedata Target Backbone Vectors

Be sure to select vectors for all isotypes even if they won't all be used.

Vector 1 Light_Chain_Kappa: LVEC-10 pTT5 hu Kappa GAHS no intron TTShukpaBB
Vector 1 Light_Chain_Lambda: LVEC-11 pTT5 hu Lambda GAHS no intron TTShidaBA
Vector 2 Heavy_Chain: LVEC-2447 pTT5 hu IgG1 WT GAHS TTShulG1wt

Heavy	Light	Description	Vector Description	Parent ID
81-3B7-12	81-3B7-19	Mix and match test		
81-3B7-14	81-3B7-11	Mix and match test		
81-3B7-17	81-3B7-11	Mix and match test		
81-3B7-18	81-3B7-19	Mix and match test		

Upload Paring File (save as .csv format)

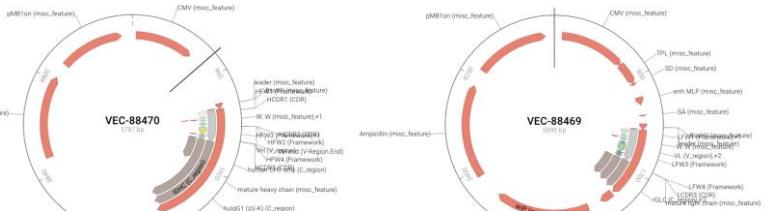
Clone Pool Bulk Upload Utility
Create Mix and Match TPPs
Create Split Plates
Launch Hybridoma Clone Analysis
Master Clone Export
Sequence Importer
[Create Clones from Pairing File](#)

1 Antibody Clone Web Protein Analyzer Web DNA Analyzer Create Variable Regions

Newly created TPP

TPP-ID	TPP Name	Pairing Heavy	Pairing Light
TPP-112174	GBT-Targ-0279	81-3B7-12	81-3B7-19
TPP-112175	GBT-Targ-0280	81-3B7-14	81-3B7-11
TPP-112176	GBT-Targ-0281	81-3B7-17	81-3B7-11
TPP-112177	GBT-Targ-0282	81-3B7-18	81-3B7-19

Newly created Vector



Register into Genedata

Pairings

Column Format for Pairing File
Heavy Clone Name: myHeavyClone_11D21
Light Clone Name: myLightClone_3H8
Description: important info about my new TPP
Vector Description: important info about the vectors that will be created
Parent TPP: TPP-12345
Synonym: theNameIwishMyTppHad

Choose Files: demo_mixandmatch.csv
Upload File to Set Pairings

Preview

Pairing file processed successfully. If you are satisfied with the pairings below click Create TPPs and Vectors in Genedata

Parental Hybridoma	Heavy Chain Representative	Light Chain Representative	TPP Description	Vec Description	Parent TPP	Synonym	Status
<input checked="" type="checkbox"/>	81-3B7-12	81-3B7-19	Mix and match test				kappa
<input checked="" type="checkbox"/>	81-3B7-14	81-3B7-11	Mix and match test				kappa
<input checked="" type="checkbox"/>	81-3B7-17	81-3B7-11	Mix and match test				kappa Pre-existing single vector VEC-34375
<input checked="" type="checkbox"/>	81-3B7-18	81-3B7-19	Mix and match test				kappa Pre-existing single vector VEC-34373

[Create TPPs and Vectors in Genedata](#)

Hit List

Acknowledgements

Pfizer

Joel Bard

Lijian Yu

Tatyana Zamkovaya

Fabian Sievers

David Palmer

Yuan Lin

Jessica Min-Debartolo

Weixu Meng

Genedata

Yi-Wei Lee

Guido Cappuccilli

Sebastian Schlicker

Amanda Fitzgerald

Jessy Sheng



Questions?

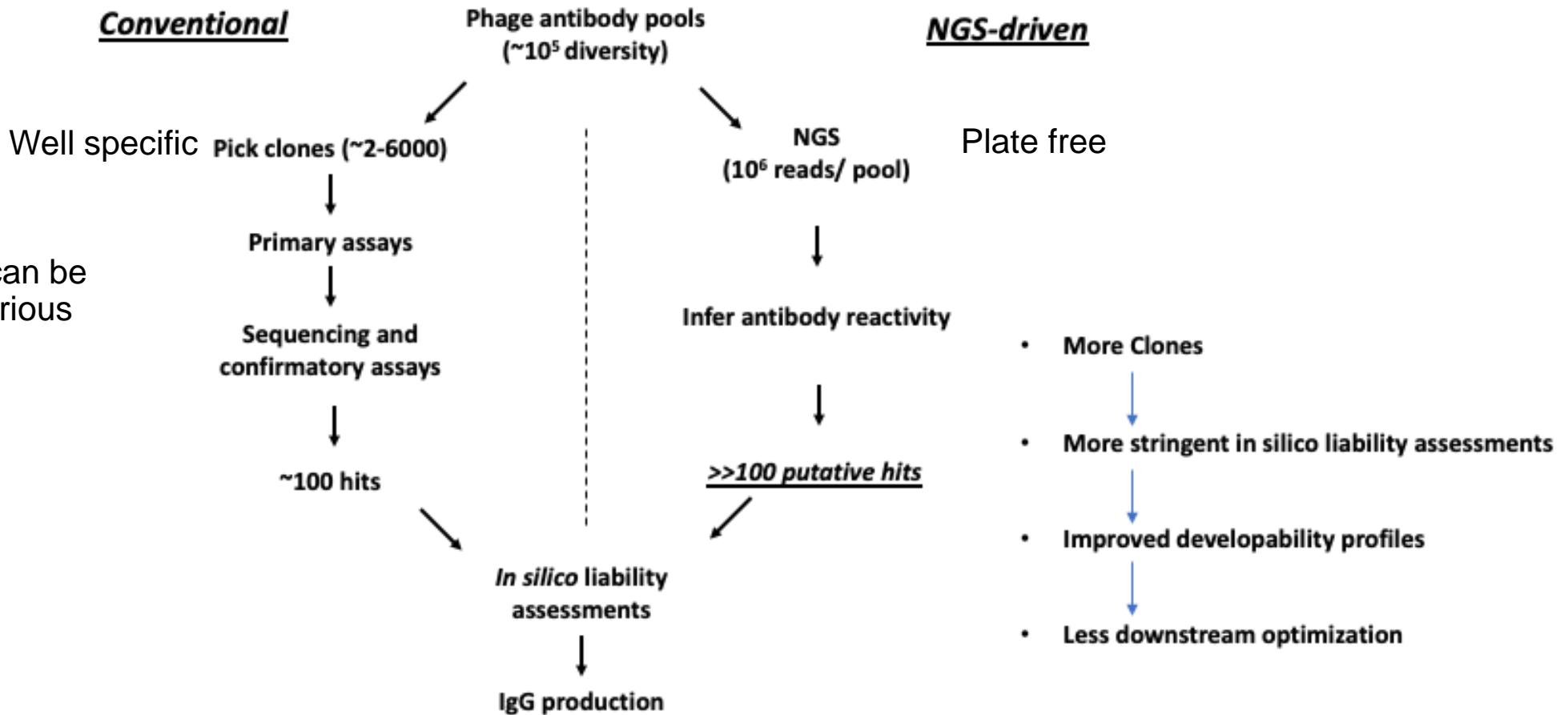
Take-home Message

- Genedata Biologics and its companion, GDBxT, are power tools in the discovery of novel therapeutical antibody and other molecular (RNA, AAV)
- Genedata Biologics is a centralized data presentation platform to share data and make decisions
- Genedata can be customized to work with different processes
- Contact **DL-BMD_BIOINFORMATICS** if you have questions or would like to discuss how Genedata can help you

Backup

Alternative phage display screening methods

Genedata Biologics can be customized to suit various screening methods



PPB Cont.

	ID	Batch Type	Chain Info	Target Product ID	Complexed Target Product ID	Parent Expression Batch ID	Parent Purification Batch ID	Parent Purification Batch Name	Production Dataset ID
	PPB-91476	Nucleic Acid	mRNA	TPP-107043, TPP-107057	TPP-92110	PEB-76798, PEB-76799	PPB-91468, PPB-91469	Light chain only DS to better represent PPB-81259, Heavy chain only DS to better represent PPB-79755	PDS-7722
	PPB-90726	Protein	Light Chain, Heavy Chain	TPP-107414, TPP-107415	TPP-110744	PEB-75453, PEB-75457	PPB-89569, PPB-89573	GBT-HTP_GBT-RSV-0373_PB-1, GBT-HTP_GBT-RSV-0374_PB-1	PDS-7360
	PPB-90725	Protein	Light Chain, Heavy Chain	TPP-107412, TPP-107415	TPP-110894	PEB-75452, PEB-75457	PPB-89568, PPB-89573	GBT-HTP_GBT-RSV-0371_PB-1, GBT-HTP_GBT-RSV-0374_PB-1	PDS-7360

Details

ID TPP-107414
Name GBT-RSV-0373
Synonym RR half bi-spe of Clesrovimab
Sequence Locked No
Purpose Therapeutic
Type Antibody
Complextion 1
Species Human (Homo sapiens)
Production Dataset PDS-7353 (RS-25266), PDS-7359 (RS-25270)

Show empty properties

Format

Format R or Knob Half Bispecific



Chain Info Light Chain, Heavy Chain
Isotype Kappa, IgG1
Chain Multiplicity 1, 1
Antibody Library LIB-1 (GBT Human Reference Sequences)
Constant Region CON-6 (Hu Kappa), CON-37 (human CH1 only)
Constant Region Species Human (Homo sapiens), Human (Homo sapiens)

Show empty properties

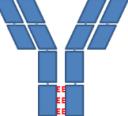
Details

ID TPP-107415
Name GBT-RSV-0374
Synonym EE half bi-spe of Clesrovimab
Sequence Locked No
Purpose Therapeutic
Type Antibody
Complextion 1
Species Human (Homo sapiens)
Production Dataset PDS-7353 (RS-25266), PDS-7360 (RS-25271)

Show empty properties

Format

Format E or Hole or DuoBody FtoL Half Bispecific



Chain Info Light Chain, Heavy Chain
Isotype Kappa, IgG1
Chain Multiplicity 1, 1
Antibody Library LIB-1 (GBT Human Reference Sequences)
Constant Region CON-6 (Hu Kappa), CON-37 (human CH1 only)
Constant Region Species Human (Homo sapiens), Human (Homo sapiens)

Show empty properties

Details

ID TPP-110744
Name GBT-RSV-0378
Description Heavy Chain 1 from GBT-RSV-0374 Heavy Chain Light Chain 1 from GBT-RSV-0374 Light Chain Heavy Chain 2 from GBT-RSV-0373 Heavy Chain Light Chain 2 from GBT-RSV-0373 Light Chain
Sequence Locked No
Purpose Therapeutic
Type Antibody
Complextion 1
Species Human (Homo sapiens)
Production Dataset PDS-7360 (RS-25271), PDS-7623 (RS-25429)

Show empty properties

Format

Format IgG-Bispecific



Chain Info Light Chain 1, Heavy Chain 1, Heavy Chain 2, Light Chain 2
Isotype Kappa, IgG1, IgG1, Kappa
Chain Multiplicity 1, 1, 1
Antibody Library LIB-1 (GBT Human Reference Sequences)
Constant Region CON-6 (Hu Kappa), CON-37 (human CH1 only)
Constant Region Species Human (Homo sapiens), Human (Homo sapiens), Human (Homo sapiens), Human (Homo sapiens)

Show empty properties