

# Council on Dairy Cattle Breeding **WebConnect and API status update**

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Ezequiel L. Nicolazzi, CDCB Chief Operating Officer



# WebConnect (brief) history

- *WebConnect* launched in 2022
- Replaced legacy “queries” and dynamic reports in previous version of CDCB website.

Genotype Queries	
Link	Query Description
•	Genotype Query: show (and fix) the usability/error status of received genotypes
•	Genotype Move/Swap APP: correct bad genotype to animal assignments
•	CDCB-Nomination, Q: ADD/REMOVE/UPDATE nomination and genotype information
•	History of Genotypes)
•	Check PM1 records
•	Get Dam: Suggests a dam for a genotyped animal based on group name, birth date and discovered MGS
•	Check Dam: Check animal pedigree and error information, and dam pedigree/progeny/calving dates.
•	SAMPLE_ID look up tool for DNA labs
•	Get CDCB Fee from herdcode
•	Retrieve Parentage Validation Record
•	Get herd code and CDCB Fee for specified animal ID
•	Find Grand sire
•	Generate Genotype reports based on requester ID
•	Genomic 'How Do I?' Documentation
•	Generate Lab reports based on LAB ID

QCS Queries	
Link	Query Description
•	Last TD
•	QCS

Bull Information Queries for : Staff			
Public	Single Link	Multiple Link	Description
•	•	•	Get official bull evaluation (domestic or interbull) by ID
•	•	•	Get bull ID evaluation by name
•	•	•	Get interbull evaluation by bull ID
•	•	•	Get interbull type evaluation by bull ID
•	•	•	Get interbull aliases
•	•	•	Get interbull IDs from ID number
•	•	•	Get interbull pedigree
•	•	•	Get bull ID number (linked to evaluation) from NAAB ID code
•	•	•	Get daughter list by bull

# WebConnect PUBLIC access

- Difference from the legacy system: public access **does not** require authentication (e.g. login).
- Access to information did not change.
- IPs are tracked and monitored.
  - Blacklist when abuse<sup>(\*)</sup> is detected

# WebConnect COLLABORATOR access

- DOES require authentication and approval process.
- Self-service: the requesting user needs to chose its own password and request access type.
- Access to information for public did not change, but tools did!
- **Differently from the previous system, CDCB can grant READ access to users.**
  - Useful for people that should access your company information but that you don't want changing things.
  - CDCB staff needs to know. Default is *write* (Please create ticket!)
- @Managers: please review periodically employees having access to WebConnect and Redmine (Please create a ticket if changes are needed).

# WebConnect functionalities – Queries



Welcome,

[Queries](#) [Data Exchange](#) [Special Section](#) [Top Animal Listing](#) [Summary Stats](#) [National Performance Metrics](#)

The screenshot displays the 'QUERIES' section of the CDCB WebConnect interface. At the top, there is a search bar with the text 'SEARCH FOR' and radio buttons for 'Cattle' (selected) and 'Goat'. A dropdown menu shows 'Animal ID (17 bytes)/ Animal ID + Sex Code (18 bytes)' and 'Found 1/1 result sets'. Below the search bar, the animal ID 'JEUSA000118662185' is displayed. A navigation bar contains tabs for 'ID/Pedigree', 'Evaluation', 'Genotype', 'Progeny', 'Errors', and 'Lactations'. The 'Genotype' tab is highlighted and circled in red. To the right of the tabs is an 'Edit' button, also circled in red. On the left side, there is a 'Requested ID Searches' section with a table containing the search ID 'JEUSA000118662185' and a red 'x' icon.



# WebConnect functionalities – Data Exchange



Welcome,

[Queries](#) [Data Exchange](#) ▾ [Special Section](#) ▾ [Top Animal Listing](#) [Summary Stats](#) ▾ [National Performance Metrics](#)

- API is WebConnect's novelty.
  - API interface (Data Exchange)
  - Plain API (Third Party)
- We'll discuss APIs later.
- Allows users to interact with API system and retrieve large amount of information fast.
- Typically, requires computer programs to process WebConnect's output



# WebConnect functionalities – Special section



Welcome,

[Queries](#) [Data Exchange](#) [Special Section](#) [Top Animal Listing](#) [Summary Stats](#) [National Performance Metrics](#)

- Collaborators only (except for ID range)
- Every other functionality not strictly linked to a single animal, bulk submissions, reports and more.



# WebConnect functionalities – Top animal listing

**CDCB**  
COUNCIL ON DAIRY CATTLE BREEDING

Welcome,

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## TOP ANIMAL LISTING

SEX  Male  Female

BREED

EVAL DATE

INDEXES & TRAITS

RANK BY

SUBSET



- Updated 5' after release time on release day
- Thursday post-release AI update in sync with NAAB

# WebConnect functionalities – Summary stats



Welcome,

[Queries](#) [Data Exchange](#) [Special Section](#) [Top Animal Listing](#) [Summary Stats](#) [National Performance Metrics](#)

- Evaluation-specific reports and summaries
- Now all gathered in a single menu
- Reports released in 3 different timings:

## Pre-release (Thu, 12pm)

Report Name
<a href="#">Breed Means, Bases and Heterosis</a>
<a href="#">Comparison of AI Bull Evaluation</a>
<a href="#">Comparison of Genomic and Traditional evaluations</a>
<a href="#">Elite Cow and Heifers Statistics</a>
<a href="#">Genetic Trend</a>
<a href="#">Percentile Tables</a>

## Release (Tue, 7.05am)

Report Name
<a href="#">Average evaluations by country of most daughters</a>
<a href="#">Source of top 100 bulls on each country's scale</a>
<a href="#">Top Animal Listing – All Bulls</a>
<a href="#">Top Animal Listing – Cow, Heifers</a>

## Post-release (Thu, 10am/12 \*)

Report Name
<a href="#">Bull Statistics</a>
<a href="#">Inbreeding Information</a>
<a href="#">Top Animal Listing – Active AI Sire (A)</a>

# WebConnect functionalities – Summary stats



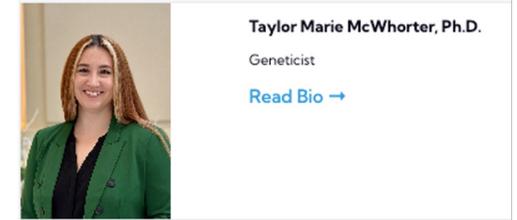
Welcome,

[Queries](#) [Data Exchange](#) ▾ [Special Section](#) ▾ [Top Animal Listing](#) [Summary Stats](#) ▾ [National Performance Metrics](#)

- Loading 40+ Gb of files to the database every run.
- Cause of WebConnect's temporary "freeze" of a few hs ~ 1 week prior to release
  - Testing an overnight simplified process (success in April)



# WebConnect functionalities – NPM



[Queries](#) [Data Exchange](#) [Special Section](#) [Top Animal Listing](#) [Summary Stats](#) [National Performance Metrics](#)

Welcome,

- a.k.a. “K-reports”
- Dr. McWhorter is leading this (big) effort: revising and enhancing each report.
- Brand new “Participation”, with all details on how these metrics are obtained and what they mean.
- “Herd averages” revision completed, programming in progress.
- All others in pipeline.



# WEBCONNECT'S API

# WebConnect's API system – Why ?

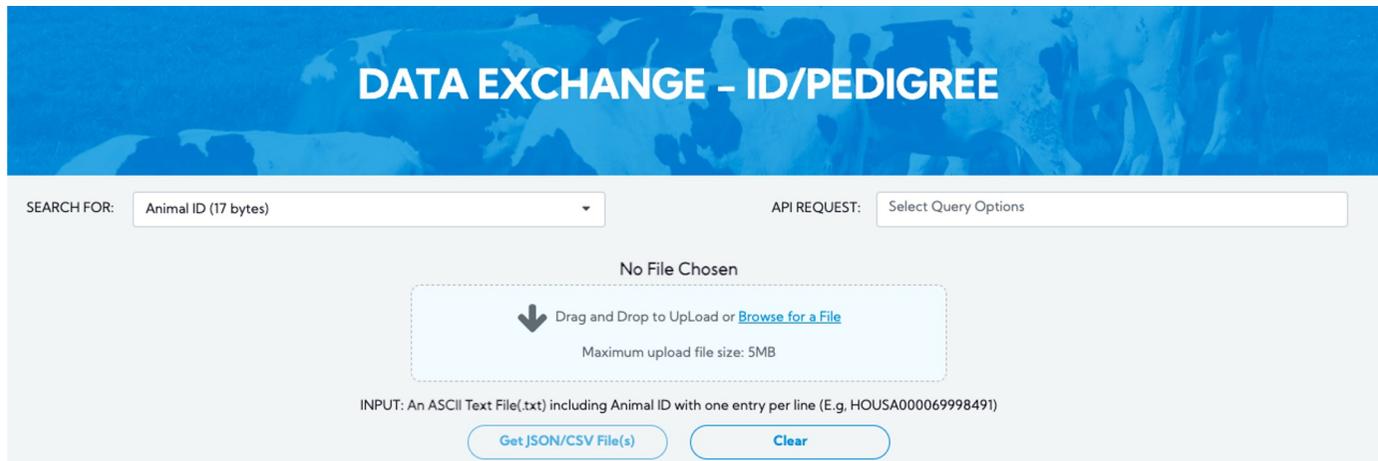
- Queries limits requests to 50 animals
  - API allows retrieving data for thousands.
- Faster and “bulkier” retrieval of information
- For nominators: allows identifying specific animals with conflicts (e.g. could be used for “triage” animals)
- Opens the possibility to automate “easy fix” conflicts
- The lead tool for the future (considering weekly volumes).

# WebConnect's API system

- This is a new feature to interact with the National Cooperator Database, introduced with WebConnect.
- Not a *true* API (yet), but a data request system, using API technology.
- Doesn't work too different from a "queries" request, but the result is "just data" (e.g. not graphical output)
  - Specific requests, input and formats (JSON and CSV)

# WebConnect's API system – How to use it?

- **Data Exchange:**
  - Intended for general (collaborator) users.
  - Manually submit a file via WebConnect (browser)
  - **Created to facilitate interaction with API and allow retrieval of large amounts of information in a single solution.**



The screenshot shows the 'DATA EXCHANGE – ID/PEDIGREE' interface. It features a search bar with 'Animal ID (17 bytes)' selected, an 'API REQUEST' dropdown set to 'Select Query Options', and a file upload area. The upload area includes a 'No File Chosen' message, a 'Drag and Drop to Upload or Browse for a File' instruction with a downward arrow icon, and a 'Maximum upload file size: 5MB' note. Below the upload area, there is an 'INPUT: An ASCII Text File(.txt) including Animal ID with one entry per line (E.g. HOUSA000069998491)' and two buttons: 'Get JSON/CSV File(s)' and 'Clear'.

# WebConnect's API system – How to use it?

- **Third party:**
  - Advanced (skilled) API usage.
  - One-call-one-file solution (requires using API GUI or programming languages).
  - Strongly suggested: *multiple animals per request!*
  - **Scripts and automations should use this end point!**

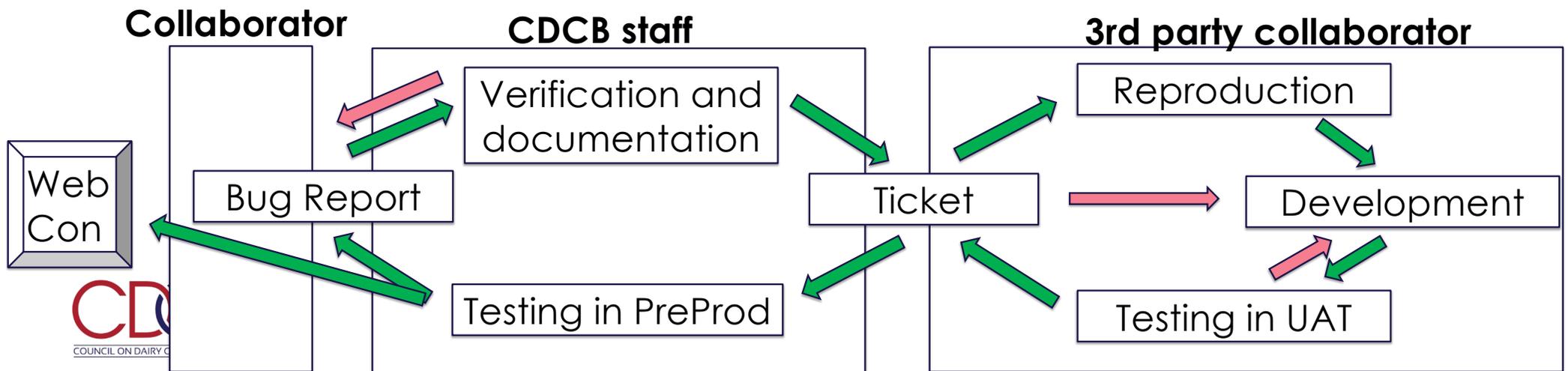
# FAQ AND EXTRA-INFORMATION

# Why is the database locked more often?

- Except for special events....
  - Co-location planned 50% power outage
  - Constructed ID re-processing
  - Introduction of 305-AA
  - Etc..
- **...the database is not locked more often than before (really!)**
- The only difference is that now processes are automated and WebConnect lets you know *when* they happen (and for how long).
- DB2 backups, exports, etc.. On a daily, weekly and monthly schedule.
  - Protecting the database *at all costs*.

# How do changes happen in WebConnect?

- WebConnect was designed by CDCB staff, but developed by a third-party company of programmers, in collaboration with DataGene.
- 3 WebConnects!
- Except in case of **disruptive bugs**, all enhancements (aka “hot fixes”) are implemented on Tuesday mornings



# We are watching.. (I)



- There is an *automated* service to prevent abuse (rare false positives)
- Queries and APIs are automatically black-listing users that go over the limit of # of queries and animals:
  - Email automated communication... then human interaction.
  - by IP (public users)
  - by User (collaborators).
- Collaborators have a 4x higher limit than public users
- Checking by hour, by day, by type of usage (query vs API).

# We are watching.. (II)



- There is a more detailed daily/ monthly check on high-end users for API.
- This is more to investigate server load times, malfunctioning systems and... prevent abuse.

EXCHANGE UI	
*** User:	- TOTAL: 3 (FAILURES: 0)
Hourly use:	
TIME: QUERYcnt (ANIMcnt)	
12: 1 (1645)	
14: 1 (350)	
15: 1 (529)	
	Genotype Query: Rqt#: 3 Fail#: 0   Anim#: 2524 (Returned: 99.6%)
*** User: k	- TOTAL: 3 (FAILURES: 0)
Hourly use:	
TIME: QUERYcnt (ANIMcnt)	
13: 3 (4084)	
	Retrieve Parentage Validation Record: Rqt#: 2 Fail#: 0   Anim#: 2380 (Returned: 100.0%)
	Sample ID Lookup: Rqt#: 1 Fail#: 0   Anim#: 1704 (Returned: 98.5%)
*** User: .	- TOTAL: 1 (FAILURES: 0)
Hourly use:	
TIME: QUERYcnt (ANIMcnt)	
14: 1 (1645)	
	Genotype Query: Rqt#: 1 Fail#: 0   Anim#: 1645 (Returned: 100.0%)
THIRD PARTY	
*** User:	- TOTAL: 48 (FAILURES: 0)
Hourly use:	
TIME: QUERYcnt (ANIMcnt)	
00: 5 (156)	
01: 5 (332)	
02: 5 (476)	
03: 5 (7)	
08: 5 (473)	
09: 4 (28)	
13: 4 (72)	
20: 5 (1919)	
22: 5 (336)	
23: 5 (444)	
	Get Animal Aliases: Rqt#: 18 Fail#: 0   Anim#: 1308 (Returned: 80.3%)
	Check - fmt1: Rqt#: 10 Fail#: 0   Anim#: 1369 (Returned: 85.4%)
	Retrieve Parentage Validation Record: Rqt#: 10 Fail#: 0   Anim#: 783 (Returned: 4.0%)
	Genotype Query: Rqt#: 10 Fail#: 0   Anim#: 783 (Returned: 4.0%)

**FUTURE**

# WebConnect performance

- Own server, locally based (in CDCB co-location).
- Own database (reduces downtime to a minimum and a handful of options)
- Replica of parts of the National Coopertor database (security)
- Some items take a toll in terms of response time (compared to previous system):
  - Network connection
  - Graphical display
  - Amount of information displayed
  - WebConnect database  $\neq$  National Cooperator Database

# Performance enhancement

- CDCB's IT team leading effort to:
  - Enhance supporting hardware and software
    - New server (in progress), new disks, more space
    - Empowered database management system
  - Review database specs to improve data retrieval
- TMA team is working on:
  - Improve responsiveness of DB queries
  - Currently on hold until all IT efforts are completed.
- To be implemented as soon as ready.



**FEEDBACK TIME!**

# We'd like to hear from you

- Past experience shows this group is GREAT for feedback => SLIDO

# THANK YOU FOR YOUR ATTENTION

## ACKNOWLEDGMENTS

U.S. dairy producers

Member sectors and collaborators

USDA AGIL

CDCB staff

