

**U. S. Department of Agriculture
Agricultural Research Service**

MATERIAL TRANSFER RESEARCH DATA EXCHANGE AGREEMENT

The research contemplated by this Agreement is authorized and governed by the terms of National Agricultural Research, Extension, and Teaching Policy Act of 1977, as amended (7 U.S.C. 3318b), and Data subject to this Agreement is governed by the terms of the Utilization of Federal Technology Act (15 U.S.C. § 3710a (b) (3) (A)).

PARTIES:

ARS: USDA, ARS, Northeast Area
Animal Genomics and Improvement Laboratory
10300 Baltimore Avenue
Room 306, Bldg. 005, BARC-West
Beltsville, MD 20705-2350
Tel: 301-504-8665
FAX: 301-504-8092
E-mail: john.cole@ars.usda.gov

Cooperator : Council on Dairy Cattle Breeding
One Town Center
4201 Northview Drive, Suite 302
Bowie, MD 20716

Institution's Scientist: João Dürr, CEO
Tel.: 240 334 4164 Ext. 311
E-mail: joao.durr@uscpcb.com

PREAMBLE:

It is understood under this Agreement that both Parties will be engaged in the exchange of Data between one another. A Party giving Data is referred to as the Provider, and a Party receiving Data is referred to as the Receiver. This Agreement contemplates that the Parties may serve either role.

This Agreement amends and replaces that certain CDCB-USDA/ARS Nonfunded Cooperative Agreement #58-1245-3-228N, signed March 27, 2013 (the "Cooperative Agreement").

PURPOSE:

The objective of this Agreement is to improve the productivity, efficiency, conformation, and health of the national dairy herd as well as the composition and quality of resulting products for the benefit of dairy producers and the consuming public.

DATA:

ARS will provide CDCB with effective analysis procedures and/or algorithms and associated knowhow (collectively, "Data") which may be used for calculation of genetic evaluations from datasets in the Cooperator's database.

CDCB will provide ARS with Phenotypic Data and Genomic Data and collect Proteomic Data and associated knowhow (also referred to as "Data").

The Data is released by the providing Party (the "Provider") to the receiving Party (the "Recipient") under the following conditions:

1. The Data provided one Party to the other shall only be used as set forth in the attached Statement of Work ("SOW"). Each Party has complete discretion to determine what Data is provided to the other Party under this Agreement.
2. Neither Party will transfer the Data, in whole or in part, to a third party without express written consent of Provider; provided, however, use and distribution of Data as set forth in the SOW controls. Any third party requesting Data shall be referred to Provider, except as otherwise provided in the SOW.
3. The Data shall remain the property or under the control of Provider and shall not be used for commercial or profit-making purposes, except as set forth in the SOW. For clarification, the Data ARS generates, methodology for calculating genetic evaluations from a database of pedigree, phenotype, and genotype information, will remain the property or under the control of ARS and it will be published. Such Data can be used by any party to generate estimates of genetic merit from a database of information controlled by that party.
4. Provider in its discretion will voluntarily make available datasets to ARS for the agreed research purposes under this Agreement. Provider assumes the defense of any suit brought against ARS by any third party claiming: i) ownership rights or control of any Data provided to ARS by Provider and ii) that Provider was not authorized to provide Data provided to ARS.
5. Neither Party shall in any way state or imply that this Agreement or the results of this Agreement is an endorsement by the other Party's organizational units, employees, products, or services except to the extent permission is specifically granted by an

authorized representative of the other Party.

6. The Parties acknowledge and agree to comply with all applicable laws and regulations of the Animal Plant Health and Inspection Service, the Center for Disease Control, and /or Export Control Administration pertaining to possession or transference of technical information, biological materials, pathogens, toxins, genetic elements, genetically engineered microorganisms, vaccines, and the like.
7. Recipient shall assume sole responsibility for any claims or liabilities that may arise as a result of the Recipient's use of the Data.
8. PROVIDER GIVES NO WARRANTIES OR GUARANTEES, EXPRESSED OR IMPLIED, FOR THE DATA, INCLUDING ACCURACY, NONINFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.
9. Data shall be returned, destroyed, or otherwise disposed of or stored, as instructed by Provider, no later than the expiration of this Agreement; provided, however, that Recipient may continue to use the Data as contemplated by this Agreement only to the extent the Data has been incorporated into genetic and genomic evaluations or predictions of Recipient, and Recipient shall have no obligation to return or destroy any such incorporated Data.
10. Recipient shall meet with Provider's representatives to determine inventorship if an invention should arise from Recipient's work with the Data. All rights, title, and interest in inventions made under this Agreement solely by employees of ARS shall be owned by ARS. Any invention made jointly under this Agreement by at least one employee of CDCB and at least one employee of ARS shall be jointly owned. Any invention made under this Agreement solely by individuals employed by CDCB shall be owned by CDCB, provided ARS is granted a royalty-free, nonexclusive, irrevocable license to use the invention for U.S. Government purposes.
11. The provisions of this Agreement are to be deemed severable and the invalidity, illegality or unenforceability of one or more of such provisions shall not affect the validity, legality or enforceability of the remaining provisions.
12. Confidentiality provisions restricted to the Data provided:
 - a. All Data provided under this Agreement is "Confidential Information" of the providing Party, regardless of whether it is marked "confidential" or "proprietary". Except as otherwise permitted under this Agreement, the receiving Party shall not disclose such "Confidential Information" to any third party nor use such Confidential Information for any other purpose than that given in this Agreement without the written permission of the providing Party.
 - b. Each Party shall use the same degree of care to protect Confidential Information

received under this Agreement as it uses to protect its own information of a similar nature, but in any event not less than reasonable care under the circumstances.

- c. Confidential Information shall not include information to the extent the receiving Party can demonstrate that (a) it had possession of the information prior to such information being provided by the providing Party; (b) the information generally is available to the public at the time of disclosure, or becomes generally available, after disclosure, through no fault of the receiving Party; or (c) the receiving Party receives the information from a third party having the right to the information and who does not impose confidentiality obligations on the receiving Party.
 - e. It shall not be a breach of this Agreement if the receiving Party is required to disclose the Confidential Information by a valid order of a court or other government body, or as otherwise required by law, or as necessary to establish the rights of either party under this Agreement; PROVIDED THAT the receiving Party shall provide prompt prior notice thereof to providing Party to enable that Party to seek a protective order or otherwise prevent such disclosure, and PROVIDED FURTHER THAT the Confidential Information otherwise shall continue to be confidential.
 - f. ARS may disclose, and/or maintain the confidentiality of, all of its Data and related information consistent with the Freedom of Information Act; provided, however, Data provided by CDCB is not subject to disclosure under the Freedom of Information Act.
13. Exchange and release of data or information collected ("project results") from the use of the Data under the SOW:
- a. Project results will be released by the Party performing the research according to uniform procedures such that (i) the other Party receives such project results not later than other interested parties and (ii) there is no subsequent restriction on release by either Party to this Agreement, consistent with the SOW.
 - b. Any public information released concerning work carried out under this Agreement will describe the contributions of both Parties to the work effort.
 - c. Project results which are compiled from the provided and received Data under this Agreement shall be shared and mutually interchanged consistent with the SOW by both Parties, and the results are deemed project results. Project results of the undertaking will be made available to both Parties. The Party performing the research has the right to publish in scientific literature the results of this project. The Party performing the research will make available to the other Party manuscript copies of any publication for review and comment prior to publication. In case of disagreement regarding publication of project results, the Party

performing the research has the right to publish provided it acknowledges this cooperative effort in such publication. Requests for confidentiality with respect to project results will be considered pursuant to and in accordance with the provisions of the Freedom of Information Act and this Agreement.

- d. Any technical publication developed as a result of this Agreement shall be submitted by the developing party to the other for advice and comment prior to publication. In the event of a dispute regarding such technical publication, a separate publication may be made with effective statements of acknowledgment and disclaimer, consistent with Section 13(c).
14. This Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement. Signature by facsimile shall also bind each of the parties to this Agreement.
15. ARS is an agency of the U.S. Government and any rights or obligations created under this Agreement are freely transferable within the U.S. Government and shall not be deemed a "transfer."
16. If the Parties hereto decide, at some future date, to engage in a cooperative research project or program using the Data, a formal Cooperative Research and Development Agreement, or other research agreement, must be negotiated and entered into between the Parties.
17. This Agreement shall be construed in accordance with United States of America Federal Law as interpreted by the Federal Courts in the District of Columbia.
18. Either party may unilaterally terminate this entire Agreement at any time by giving the other party written notice not less than sixty (60) calendar days prior to the desired termination date.

This Material Transfer Research Data Exchange Agreement shall become effective upon the date of final signature and shall continue in effect for a period of five (5) years; provided, however, that the obligations assumed by a receiving Party, regarding the maintenance of confidentiality, under this Agreement, shall remain in effect for two (2) years from the expiration of this Agreement.

Statement of work follows then the signature page:

Statement of Work

I. Introduction

Since the early 1900s, the dairy industry and the ARS have been cooperating to improve the genetic merit of the national dairy herd, primarily through data collected on dairy animals. The Council on Dairy Cattle Breeding ("CDCB" or "Cooperator") represents the industry members contributing to a Cooperator database accessed for the calculation of genetic evaluations ("CGE") and administers a quality assurance program to assure quality and integrity of the data. Historically, phenotypic data have been collected, owned, and controlled by the dairy industry and sent to the ARS for analysis. The collaboration has resulted in improved efficiency of milk production that has improved the national dairy herd and the wider global dairy industry.

II. Objectives

The objective of this Agreement is to improve the productivity, efficiency, conformation, and health of the national dairy herd as well as the composition and quality of food produced by the national dairy herd for the benefit of dairy producers and the dairy foods-consuming public. This will be accomplished by collaboration between ARS and CDCB to develop more efficient methods for using large amounts of pedigree, performance, and genomic information to compute predictions of genetic merit; development of evaluations for new traits of economic importance; calculation of selection indices for ranking cattle on lifetime profit; identification of new genetic variants in the population that have harmful effects on traits of economic importance; and determination of optimal management practices using field data.

III. ARS Approach, Methodology, and Responsibilities

- A. Analyze collected data for research purposes to improve the efficiency of CGE, develop genetic evaluations for new traits, identify genomic regions and variants that have large effects on traits of interest, and determine best data-driven management practices.
- B. Recommend changes to the methods used to compute CGE based on analysis of data collected for research purposes.
- C. ARS will research data-quality issues and develop methods to ensure data added to the Cooperator database are of high quality.
- D. ARS will develop effective analysis procedures that Cooperator may use to compute estimates of genetic merit of dairy animals from datasets in the Cooperator's database.

- E. ARS will periodically publish documentation of enhancements for procedures used to compute estimates of genetic merit of dairy animals and provide summaries of ARS algorithms to others for educational purposes as appropriate.
- F. ARS will determine when the information and potential benefit is sufficient to develop ARS algorithms for new traits.
- G. ARS will monitor the US dairy population to identify new genetic variants with harmful effects on fertility and/or calf livability, develop haplotype tests for identifying and tracking carriers of those harmful variants, and attempt to determine the causal mechanisms associated with those variants.
- H. ARS will analyze phenotypic data to determine best farm management practices for recommendation to dairy farmers when potential benefits warrant such investment.
- I. ARS will, as necessary, recommend updates to economic selection indices to reflect changes in economic conditions and include information about new traits.

IV. COOPERATOR Approach, Methodology, and Responsibilities

- A. Collect phenotypic, pedigree, genomic, and proteomic data.
- B. Edit collected data for accuracy prior to inclusion in the Cooperator's database and maintain data in a database to support CGE.
- C. Analyze collected data through the CGE to produce estimates of genetic merit.
- D. Analyze collected data for research purposes to improve the efficiency of CGE, develop genetic evaluations for new traits, identify genomic regions and variants that have large effects on traits of interest, and determine best data-driven management practices.
- E. Improve methods used to compute CGE based on analysis of data collected for research and commercial purposes.
- F. Distribute estimates of genetic merit to bull and cow owners, other industry participants, researchers and the public for a fee.
- G. Continue to collect phenotypic data and genomic data and collect proteomic data from any third party providing a written release or license providing data to the Cooperator for inclusion in Cooperator's database, or as otherwise consistent with Cooperator's policies and practices for data access and requests.
- H. Edit and maintain collected data:

1. Ensure data are edited for accuracy prior to inclusion in the Cooperator database.
 2. Conduct an effective quality certification program to ensure that only high-quality data are added to the Cooperator database.
 3. Identify additional sources of data for inclusion in the Cooperator Database to support ARS research into new traits.
 4. Maintain and control the Cooperator database accessed as part of CGE with access by ARS only for non-commercial research purposes.
- I. Carry out the CGE applying appropriate analysis procedures to produce estimates of genetic merit from data in the Cooperator database.
 - J. Distribute estimates of genetic merit consistent with its then-current fee schedule, and distribute other products and services developed by Cooperator consistent with its mission, for a fee if appropriate, subject to the terms and conditions of the Cooperator.
 - K. Host Cooperator's website and related software and services, and allow queries of such website, for a fee if appropriate, for access by those agreeing to the terms and conditions of the Cooperator.
 - L. Maintain, own, and administer the Cooperator database.
 - M. Solicit research proposals and provide data, materials, and cooperation to third-parties for non-commercial research purposes.
 - N. Distribute data consistent with Cooperator's policies and practices for data access and requests.

Signatures Next page

ACCEPTED FOR THE AGRICULTURAL RESEARCH SERVICE



James A. Poulos, III (Technology Transfer Coordinator)

3 JAN 2018

Date

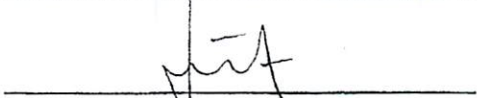


Robert Griesbach (ADO)

1-3-18

Date

ACCEPTED FOR THE COOPERATOR :

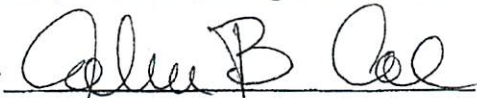


João Durr, Chief Executive Officer

1-3-18

Date

By signing below, the ARS Scientist and ARS Research Leader acknowledge that they have read, understood, and agreed to the terms and conditions of this Agreement.



John B. Cole (ARS Scientist and Acting RL)

1/3/18

Date

UNITED STATES DEPARTMENT OF AGRICULTURE - RESEARCH, EDUCATION, AND ECONOMICS
Award Face Sheet

Agency Control No. 46889

Agency AGRICULTURAL RESEARCH SERVICE	Type of Instrument Material Transfer Research Agreement	Authority See Agreement															
Title of Project Increasing Accuracy of Genomic Prediction, Evaluating New Traits, and Redefining Selection Goals	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;">Agreement Number/ FAIN 58-8042-8-007</td> <td style="width:33%;">Type of Action New</td> <td style="width:33%;">Correction N</td> </tr> <tr> <td colspan="3">CFDA No. 10.001</td> </tr> <tr> <td colspan="3">Period of Performance</td> </tr> <tr> <td>Start 11/01/2017</td> <td>End 10/31/2022</td> <td>(Reserved)</td> </tr> </table>	Agreement Number/ FAIN 58-8042-8-007	Type of Action New	Correction N	CFDA No. 10.001			Period of Performance			Start 11/01/2017	End 10/31/2022	(Reserved)				
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CFDA No. 10.001																	
Period of Performance																	
Start 11/01/2017	End 10/31/2022	(Reserved)															
Agency Administrative Point of Contact/ ADO ROBERT J GRIESBACH USDA, AGRICULTURAL RESEARCH SERVICE OFFICE OF TECHNOLOGY TRANSFER 5601 SUNNYSIDE AVE, RM 4-1158 Beltsville MD 20705-5131 Phone: 301-504-6905 Fax: 20705-5131 E-mail: robert.griesbach@ars.usda.gov	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:33%;">Total Amount \$0.00</td> <td style="width:33%;">Amount Obligated by This Action \$0.00</td> <td style="width:33%;">Indirect Cost Rate 0.00%</td> </tr> <tr> <td colspan="3">Non-Federal Entity/ Federal Agency (Legal Name and Address)</td> </tr> <tr> <td colspan="3"> COUNCIL ON DAIRY CATTLE BREEDING 4202 Northview Drive, Suite 302 Bowie MD 20716- US POC: </td> </tr> <tr> <td colspan="2">Phone:</td> <td>Fax:</td> </tr> <tr> <td colspan="2">E-mail: joao.durr@uscpcb.com</td> <td>DUNS ID:</td> </tr> </table>		Total Amount \$0.00	Amount Obligated by This Action \$0.00	Indirect Cost Rate 0.00%	Non-Federal Entity/ Federal Agency (Legal Name and Address)			COUNCIL ON DAIRY CATTLE BREEDING 4202 Northview Drive, Suite 302 Bowie MD 20716- US POC:			Phone:		Fax:	E-mail: joao.durr@uscpcb.com		DUNS ID:
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Phone:		Fax:															
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Agency Principal Investigator JOHN BRUCE COLE 10300 BALTIMORE AVENUE BLDG. 005, RM. 306, BARC-WEST BELTSVILLE MD 20705 Phone: 301-504-8885 Fax: 301-504-8092 E-mail: john.cole@ars.usda.gov	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="3">Non-Federal Entity/ Federal Agency Principal Investigator</td> </tr> <tr> <td colspan="3"> JOAO DURR CDCB Chief Executive Officer 4202 Northview Drive, Suite 302 BOWIE MD 20717 Phone: 240-334-4184 Fax: 614-881-8040 E-mail: joao.durr@uscpcb.com </td> </tr> </table>		Non-Federal Entity/ Federal Agency Principal Investigator			JOAO DURR CDCB Chief Executive Officer 4202 Northview Drive, Suite 302 BOWIE MD 20717 Phone: 240-334-4184 Fax: 614-881-8040 E-mail: joao.durr@uscpcb.com											
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Agency Finance Office JENNIFER C COURCHANE USDA, ARS, AFM, EBSC BUDGET, TRAVEL, AND AGREEMENTS BRANCH 10300 BALTIMORE AVE, BLDG 3 Beltsville MD Phone: 301-504-5978 Fax: 301-504-5535 E-mail: jennifer.courchaine@ars.usda.gov	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2">Method of Payment</td> </tr> <tr> <td><input type="checkbox"/> HHS/ Payment Management System</td> <td><input type="checkbox"/> Advance Payment Authorized</td> </tr> <tr> <td><input type="checkbox"/> EFT/ Treasury Check</td> <td><input type="checkbox"/> Pre-Award Costs Authorized</td> </tr> <tr> <td><input checked="" type="checkbox"/> Agency Receives Funds</td> <td><input type="checkbox"/> UES (for FAS awards only)</td> </tr> <tr> <td><input type="checkbox"/> ASAP</td> <td><input type="checkbox"/> IPAC</td> </tr> </table>		Method of Payment		<input type="checkbox"/> HHS/ Payment Management System	<input type="checkbox"/> Advance Payment Authorized	<input type="checkbox"/> EFT/ Treasury Check	<input type="checkbox"/> Pre-Award Costs Authorized	<input checked="" type="checkbox"/> Agency Receives Funds	<input type="checkbox"/> UES (for FAS awards only)	<input type="checkbox"/> ASAP	<input type="checkbox"/> IPAC					
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<input type="checkbox"/> ASAP	<input type="checkbox"/> IPAC																

PROVISIONS

This Agreement incorporates the following:

- Statement/ Scope of Work
- Proposal
- Non-Federal Entity Proposal/ Award/ Agreement
- Research & Related Budget (Total Fed + Non-Fed) or REE-454
- Research & Related Budget or REE-455
- Prime Award attached (for subrecipients)
- Comments (REE-461, page 2)

These are available at <http://www.afm.ars.usda.gov/agreements/partnership.htm>

- Conflict of Interest Policy
- USDA Civil Rights Policy Statement
- ARS-157 - Research Support Agreement Management Report Template
- USDA Civil Rights Poster (AD-475-C)

Reporting Requirements:

- Submit to: Agency PI ADO Non-Federal Entity/ Federal Agency
- | | | |
|--------------------------------------|--------------------------------------|--------------------------------------|
| Performance Reports | Financial Reports | Management Reports |
| <input type="checkbox"/> Quarterly | <input type="checkbox"/> Quarterly | <input type="checkbox"/> Monthly |
| <input type="checkbox"/> Semi-Annual | <input type="checkbox"/> Semi-Annual | <input type="checkbox"/> Quarterly |
| <input type="checkbox"/> Annual | <input type="checkbox"/> Annual | <input type="checkbox"/> Semi-Annual |
| <input type="checkbox"/> Final | <input type="checkbox"/> Final | <input type="checkbox"/> Final |
- Intellectual Property Reports (www.Edison.gov)
 - Form SF-428-B Tangible Personal Property Report - Final Report

Applicable Regulations, Terms and Conditions, and Required Certifications (available at <http://www.afm.ars.usda.gov/agreements/partnership.htm>)

- 2 CFR Part 200 and 2 CFR Part 400
- 7 CFR Part 550 - General Administrative Policy for Non-Assistance Cooperative Agreements
- General Provisions, Research Support Agreement (REE-452R)
- General Provisions, Trust Fund and Reimbursable Cooperative Agreements (REE-22)
- AD-1047 - Certification Regarding Debarment, Suspension and other Responsibility Matters - Primary Covered Transactions
- AD-1048 - Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions
- AD-1049 - Certification Regarding Drug-Free Workplace Requirements (Grants) - Alt I - For Grantees Other Than Individuals
- AD-1050 - Certification Regarding Drug-Free Workplace Requirements (Grants) - Alt II - For Grantees Who Are Individuals
- AD-1052 - Certification Regarding Drug-Free Workplace State and State Agencies
- AD-3031 - Assurance Regarding Felony Conviction or Tax Delinquent Status for Corporate Applicants
- Certification Regarding Lobbying
- REE-26 - Organization Information, Representations, Assurances & Certifications

This agreement, subject to the provisions above, is executed by the United States Department of Agriculture:

Signature	ADO Name ROBERT J GRIESBACH	Date
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By signing this agreement, the signor certifies that they are vested with the authority to enter into this agreement.

Non-Federal Entity/ Federal Agency Signature	Name and Title	Date
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Non-Federal Entity/ Federal Agency Signature	Name and Title	Date
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12/21/17

U.S. DEPARTMENT OF AGRICULTURE - RESEARCH, EDUCATION, AND ECONOMICS
Award Face Sheet
REE-451, Page 2

Agreement Number/FAIN: 58-8042-8-007

Agency Control No.: 46889

Type of Action: New

BOC: 0250

Project Number: 000082181

Log No.: 62181

FMMI Customer Code :

Agency Funds Chargeable - Agency Use Only

Account Code	FY	Amount	FMMI Fund Code	Cost Center	WBS Element
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