

United States Department of Agriculture Extramural Agreement	Type of Research Agreement: Non Funded Cooperative Agreement	Control No. 31800
Title of Project National Dairy Genetic Evaluation Program	Agreement Number: 58-1245-3-228N	Type of Action: New
Accession No: 424155		
Period of Agreement: 12/31/2012 thru 12/30/2017		
Agency (Name and Address) USDA, AGRICULTURAL RESEARCH SERVICE BUDGET, TRAVEL, AND AGREEMENTS BRANCH, EBSC 10300 BALTIMORE AVE, BG 003/RM 331, BARC-WEST BELTSVILLE MD 20705	Project Number: 1245-31000-101-07N	Authority: 7 U.S.C.3318(b)
Agreement Total: \$0.00 Change in Agreement Total: \$0		
Accounting Distribution (Accounting Code / Amount)		
ARS Principal Investigator (Name and Address) PAUL M VAN RADEN 10300 BALTIMORE AVENUE BLDG. 005, RM. 306, BARC-WEST BELTSVILLE MD 20705	Cooperator/ Recipient/ Sponsor (Name and Address) COUNCIL ON DAIRY CATTLE BREEDING 6468 East Main Street REYNOLDSBURG OH 43068-2362 UNITED STATES	
Finance Office (Complete Mailing Address)	Cooperator/ Sponsor/ Recipient Designated Representative (i.e., PI) (Name and Address) OLE M MELAND 6468 East Main Street REYNOLDSBURG OH 43068-2362	

This Agreement includes the following:

- Statement of Work
- Proposal
- Sponsor's Proposal/ Award/ Agreement
- Budget (Form REE454)
- Budget (Form REE455)

Applicable Provisions Available at <http://www.afm.ars.usda.gov/agreements/partnership.htm>

Non Assistance Coop. Agreement (7 CFR Part 550) Reporting Requirements (submit) ARS PI Sponsoring Organization ADO

Research Support Agreement (REE-452R) Submit: Performance Reports Financial Reports Management Reports (RSA Only)

- TFCA and RCA (7 CFR Part 550 and REE-22)
- Grants and ATCA (REE-453)
- Non Funded Coop. Agreement (7 CFR Part 550 and REE-29)
- Financial Assistance Use of Universal Identifier (DUNS) and CCR (75 FR 55671-55676)
- SubAward Requirements for FFATA Implementation (75 FR 55663-55671)
- USDA Research Misconduct Regulation for Extramural Research (75 FR 49357)

Other (Specify):


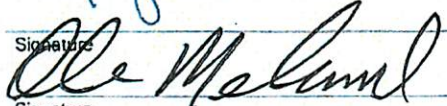
- AD-1047 - Certification Regarding Debarment, Suspension and other Responsibility Matters - Primary Covered Transactions
- AD-1049 - Certification Regarding Drug-Free Workplace Requirements - Non-Individuals
- AD-1050 - Certification Regarding Drug-Free Workplace Requirements - Individuals
- USDA Civil Rights Poster (AD-475A)
- USDA Civil Rights Policy Statement (<http://www.afm.ars.usda.gov/agreements/partnerships.htm>)
- REE-26 - Certification Regarding Performing Organization Type
- REE-23 - Certification Regarding Lobbying - Contracts, Grants, Loans and Cooperative Agreements
- Attachment A - RSA Monthly Management Reporting Template
- COMMENTS, (see page 2)

Applicable Provisions Payment:

- HHS/ Payment Management System
- EFT/ Treasury Check
- ARS Receives Funds
- Advance Payment Authorized
- Pre-Award Costs Authorized

Report of Inventions and Subcontracts via iEdison Web interface at <http://www.iEdison.gov>

For the United States Department of Agriculture:

Authorized Departmental Officer 	Typed Name MARY L WILKINS	Date 3/27/2013
For the Performing/ Sponsoring Organization: (Signature of persons authorized to incur contractual obligations)		
Signature 	Type Name and Title Ole Meland Chair CDCB	Date 3/27/2013
Signature	Type Name and Title	Date

**U.S. Department of Agriculture
Agricultural Research Service
NONFUNDED
COOPERATIVE AGREEMENT**

PURPOSE:

The United States Department of Agriculture, Agricultural Research Service (ARS) and the Council on Dairy Cattle Breeding (CDCB or “COOPERATOR”) have been long-term partners and have a mutual interest in improving milk production, health, fertility, and conformation traits in dairy cattle. In order to continue their collaboration to improve efficiencies of bovine dairy production and to extend their efforts to improve feed efficiency and disease resistance for the national bovine dairy herd, ARS and CDCB (hereinafter “Party” or “Parties”) enter into this Nonfunded Cooperative Agreement (the “Agreement”).

AUTHORITY:

ARS is authorized to enter into this Agreement pursuant to 7 U.S.C. 3318(b). This Agreement is subject to the General Administrative Policy for Non-Assistance Cooperative Agreements, 7 C.F.R. Part 550.

ARTICLES

Article 1. Definitions

- 1.1 **AIPL** means Animal Improvement Programs Laboratory of ARS.
- 1.2 **Third Party** means any party that is not a signatory to this agreement.
- 1.3 **Dairy Animal** means bovine bulls, cows, and offspring thereof.
- 1.4 **Phenotypic Data** means the historic and newly recorded physical, physiological, and performance attributes collected on Dairy Animals and their products. Examples of Phenotypic Data include but are not limited to milk yield, percentage of fat and protein in milk, milk somatic cell count, breeding information, calving difficulty, stillbirth, health, fitness, and conformation traits. This definition includes associated information such as the birth date, parentage or ancestry, and the physical location of a Dairy Animal. Phenotypic Data are controlled by the COOPERATOR.
- 1.5 **Biological Material** means any physical sample including deoxyribonucleic acid (DNA) and ribonucleic acid (RNA) taken from a Dairy Animal, prepped for analysis, and placed on a panel or chip controlled by COOPERATOR.
- 1.6 **Genomic Data** means information about heritable characteristics of Dairy Animals obtained by analysis of DNA or RNA or by other scientific analysis that is capable of being put into a computer readable format. Genomic Data include, but are not limited to, genotypes, sequences, gene expression, and genotypic information derived in whole or in part through the use of genotypes such as imputed genotypes and single-

nucleotide polymorphism (SNP) effects. Genomic Data are controlled by COOPERATOR.

- 1.7 **Proteomic Data** means information pertaining to a Dairy Animal's proteins including the expression, modification, and interaction of such proteins. Such proteins include but are not limited to enzymes, antibodies, and cytokines. Proteomic Data are controlled by COOPERATOR.
- 1.8 **Cooperator Database** means the database that is the subject of the Agreement, which is composed of data including but not limited to Phenotypic Data, Genomic Data, and Proteomic Data. Only data for which the COOPERATOR has a material license agreement authorizing its use by the COOPERATOR will be included. The Cooperator Database is controlled by COOPERATOR.
- 1.9 **CGE (Calculation of Genetic Evaluations)** means the process of accessing the Cooperator Database and calculating genetic/genomic evaluations. AIPL will not conduct any official CGE after the Effective Date of this Agreement.
- 1.10 **Estimates of Genetic Merit** are computer calculated values for Dairy Animals that are products of CGE generated from Phenotypic Data and possibly Genomic Data. Genomic predictions are a type of Estimate of Genetic Merit that specifically includes Genomic Data and in the future may include Proteomic Data. Under this Agreement, COOPERATOR controls Estimates of Genetic Merit that are calculated in whole or in part from the Cooperator Database and by COOPERATOR employees.
- 1.11 **Intellectual Property** for purposes of this agreement means any process, discovery, determination, invention, composition, or improvement that results from using Phenotypic Data, Genomic Data, or Proteomic Data, as well as all: (i) patents and other rights to inventions or designs; (ii) trade secrets; (iii) copyrights; (iv) rights regarding trade names, logos, domain names, URLs, trademarks, service marks, and other proprietary indicia or addresses and all goodwill associated therewith; (v) any similar rights relating to intangible intellectual property; and (vi) all extensions of the foregoing. *Specifically excluded as Intellectual Property are inventions made outside the scope of this Agreement or prior to the Effective Date of this Agreement. More specifically excluded are software and algorithms created by ARS prior to or after the Effective Date of this Agreement. A list of software and algorithms created prior to the Effective Date of this Agreement are set forth in Appendix A.*
- 1.12 **Confidential Information** means any confidential or proprietary information provided by the other Party or any information derived from the Cooperator Database by COOPERATOR and communicated to ARS by COOPERATOR, including but not limited to trade secrets, results, commercial or financial information that is privileged or confidential under the meaning of 5 USC 552(b)(4), Intellectual Property, Phenotypic Data, Genomic Data, Proteomic Data, Biological Materials, CGE, Estimates of Genetic Merit, and any information marked "Confidential" or "Proprietary."

- 1.13 **AIPL Algorithms** means a mathematical, step by step procedure or method that could be implemented on a computer that contributes to the genetic evaluation program developed solely by AIPL, or jointly by AIPL and COOPERATOR. Algorithms may be included in software. Software, source code, and object codes are not algorithms under this agreement.
- 1.14 **Subject Invention** means any Intellectual Property of a Party conceived or first actually reduced to practice in the course of or under this Agreement related to the subject matter hereof.
- 1.15 **Scope of Agreement** means those activities set forth in Schedule 1, entitled "Statement of Work."
- 1.16 **Effective Date** means the date communicated by COOPERATOR to ARS that it has the capability to manage the Cooperator Database and calculate genetic/genomic evaluations.

Article 2. Confidentiality

- 2.1 Neither Party shall disclose Confidential Information to any other party, including any other governmental department, agency, laboratory, or entity nor use such Confidential Information for any purpose other than that stated in the Statement of Work without written permission from the other Party, except as otherwise required by law. Only AIPL employees, the COOPERATOR, and those approved by the COOPERATOR may have access to Confidential Information, including access to the Cooperator Database.
- 2.2 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.
- 2.3 Confidential Information does not include information for which a Party can demonstrate that:
- a. such Party had ownership of the Confidential Information prior to developing it or receiving it from the other Party (for the avoidance of doubt, ARS does not own Phenotypic Data, Biological Material, Genomic Data, Proteomic Data, the Cooperator Database, CGE, Estimates of Genetic Merit, or Intellectual Property provided by COOPERATOR, or any information derived from the Cooperator Database);
 - b. the information is available to the public at the time of disclosure, or becomes available after disclosure, through no fault of such Party; or
 - c. such Party receives the information from any other party having been granted the right to disclose the information and who agrees in writing that disclosure of the Confidential Information is permitted.

- 2.4 It shall not be a breach of this Agreement if a Party is required to disclose Confidential Information by a valid order of a court or as otherwise required by law, or as necessary to establish the rights of either Party under this Agreement; provided that the Party seeking to disclose Confidential Information shall provide prompt prior notice thereof to the other Party to enable the other Party to seek a protective order or otherwise prevent such disclosure, and PROVIDED FURTHER THAT the Confidential Information otherwise shall continue to be treated as Confidential Information.
- 2.5 Each Party agrees to take all reasonable steps to protect the Confidential Information and Intellectual Property from unauthorized copy or use.

Article 3. Publications

- 3.1 ARS, subject to the requirements of this Agreement, including but not limited to Article 2 (Confidentiality) and Article 7 (Ownership of Subject Inventions), may publish information that results from this Agreement, PROVIDED:
- a. The COOPERATOR shall be given an opportunity to review a draft of information to be published at least thirty (30) days prior to submission for publication.
 - b. Where practical, the publication shall acknowledge this Agreement and the contributions of each Party's personnel.
 - c. Subject to the requirements of this Agreement, including but not limited to Article 2 (Confidentiality), this Article 3 (Publication), and Article 7 (Ownership of Subject Inventions), the final decision as to the publication content rests with the Party that writes the publication.
- 3.2 Publication and/or other disclosure of the AIPL Algorithms or ARS Software shall be delayed as necessary to preserve both United States of America and foreign patent rights in a Subject Invention.
- a. Such a delay of up to six months, or longer if reasonable, will only be granted if requested in writing; and
 - b. The requesting Party demonstrates promptness and diligence in seeking patent protection on the Subject Invention.

Article 4. Meetings, Reports, and Records

- 4.1 Frequent and effective communication is essential to the successful accomplishment of the objectives of this Agreement. To this end, the scientific representatives of ARS and COOPERATOR shall meet (meetings need not be in person if agreed upon) at least once every 6 months to exchange information, perform critiques, and make plans

and recommendations. The Parties will supply each other written progress reports at least 15 calendar days prior to each semi-annual meeting, or employ other reporting arrangements as the Parties agree.

- 4.2 Any such plan or recommendation that is outside the Scope of Agreement shall be reduced to writing and referred to the Authorized Agent of each Party for appropriate action. Any such plan or recommendation so referred shall not be binding upon either Party unless incorporated into this Agreement by written amendment.
- 4.3 Each Party shall keep complete records relating to the research that is the subject matter of this Agreement. All such records shall be available for inspection by either Party at reasonable times. The records, or true copies of them, shall be delivered to either Party upon request.
- 4.4 The AIPL Algorithms that are collected, compiled, and evaluated under this Agreement shall be shared and mutually provided by COOPERATOR and ARS.
- 4.5 A final report summarizing the accomplishments of this Agreement shall be submitted by each Party, separately or jointly, to Authorized Agents of both Parties within 90 days of the completion of the term of this Agreement or any renewed term.
- 4.6 The scientific representatives of ARS and the COOPERATOR will jointly produce an annual report summarizing the evaluation system over the past year. This report will include information sent to the International Bull Evaluation Service (Interbull) Center to validate CGE results for potential use in international CGE, explanations of significant changes to the system, and priority issues for investigation. The report is intended to contribute to maintaining the reputation of U.S. genetic evaluations by documenting the cooperation between ARS and COOPERATOR in maintaining and improving dairy cattle production.

Article 5. Term

- 5.1 The term of this Agreement means a five year period commencing from the signing date of the last Party to sign this Agreement.
- 5.2 After the initial term and upon mutual agreement of the Parties, this Agreement may be renewed for successive terms not to exceed 5 years per term.

Article 6. Algorithms

- 6.1 In the absence of a funded Cooperative Research and Development Agreement (CRADA), AIPL Algorithms and Software developed solely by employee(s) of AIPL under this Agreement shall be owned by ARS and shall be made publicly available to others by ARS.
- 6.2 In the absence of a funded Cooperative Research and Development Agreement

(CRADA), co-developed AIPL Algorithms and Software by employee(s) of ARS and COOPERATOR shall be co-owned by COOPERATOR and ARS and shall be made publicly available to others by ARS.

- 6.3 Algorithms and Software developed solely by employee(s) of COOPERATOR shall be owned by COOPERATOR and access to such COOPERATOR owned Algorithms and Software will be determined by COOPERATOR.
- 6.4 While this Agreement is in effect, AIPL will be given reasonable access to the Cooperator Database to generate and improve AIPL Algorithms for calculating genetic merit and for other non-commercial research purposes jointly agreed to by the parties consistent with this Agreement. Consistent with Article 2 (Confidentiality), ARS shall not release or disclose any information derived from the Cooperator Database, including but not limited to individual animal genetic evaluations and Estimates of Genetic Merit after the Effective Date of this Agreement. Any ARS information provided to COOPERATOR under a material license agreement is not information derived from the Cooperator Database. Any Algorithms or Software created by AIPL is not information derived from the Cooperator Database.

Article 7. Ownership of Subject Inventions

- 7.1 All rights, title, and interest in any Subject Invention made, excluding any COOPERATOR Intellectual Property or Confidential Information, under this Agreement solely by employee(s) of AIPL shall be owned by ARS.
- 7.2 All rights, title, and interest in any Subject Invention made under this Agreement by at least one employee of AIPL and at least one employee of COOPERATOR shall be jointly owned by ARS and COOPERATOR.
- 7.3 All rights, title, and interest in any Subject Invention made solely by employees of COOPERATOR shall be owned by COOPERATOR ("COOPERATOR Invention"). CGE and Estimates of GENETIC Merit conducted or generated by COOPERATOR are a Subject Invention solely of COOPERATOR and may only be distributed by COOPERATOR in accordance with the Statement of Work. Notwithstanding the foregoing, COOPERATOR hereby grants to ARS and agrees to grant in the future a limited, non-exclusive, perpetual, royalty-free license to use the COOPERATOR Invention solely within the scope of COOPERATOR's prior written consent, which may be withheld for any reason.
- 7.4 Notwithstanding anything to the contrary contained herein, each party shall retain sole ownership of its Confidential Information and Intellectual Property independently developed prior to the date of this Agreement. Except as expressly provided herein, all present and future Intellectual Property rights of either party shall remain the exclusive property of such Party, and no rights to such Intellectual Property and other identifying material shall vest in the other Party because of this Agreement.
- 7.5 Assignments & Cooperation. Each Party represents and warrants that it will require

all of its employees and independent contractors creating or modifying any Intellectual Property or Confidential Information hereunder to execute written assignments assigning all such individual's right, title, and interest in and to such Intellectual Property, Subject Inventions, AIPL Algorithms, or Confidential Information to such respective Party sufficient enough to enable such Party to perform its obligations hereunder and license or assign such Intellectual Property, Subject Inventions, AIPL Algorithms, or Confidential Information to the other Party as applicable herein.

Article 8. Subject Invention Information

- 8.1 The Authorized Agents or designees of each Party shall promptly make written disclosure to each other of each Subject Invention.
- 8.2 This information shall be treated as Confidential Information by the receiving Party, EXCEPT that it may be shared with those having a need to know as reasonably determined by such Party.
- 8.3 Each Party shall provide, when requested by the other, all information in its possession, or true copies thereof, pertaining to a Subject Invention that may be necessary or useful in the preparation, filing, and prosecution of patent applications covering the Subject Invention.
- 8.4 The provisions of the Article 8 shall survive indefinitely with respect to any Subject Invention regardless of any expiration or termination of the Agreement, however caused.

Article 9. Use of Name or Endorsements

- 9.1 COOPERATOR shall not in any way state or imply that this Agreement or the work products of this Agreement are an endorsement by ARS of COOPERATOR'S organizational units, employees, products, or services except to the extent permission is specifically granted by ARS.

Article 10. Regulatory Compliance with Government Rules & Regulations

- 10.1 COOPERATOR is responsible for, and ARS will offer reasonable assistance to the extent allowed by the law, obtaining appropriate opinions, permits, or licenses from Federal or State agencies that regulate research materials or commercial products that may arise from the research work performed within the Scope of Agreement.
- 10.2 In carrying out its responsibilities under this Article, COOPERATOR shall:
 - a. Consult and coordinate regulatory approval actions with ARS; and
 - b. Give ARS' Authorized Agent or designee a copy of any applications and opinions, permits, or licenses issued.

- 10.3 Both Parties acknowledge and agree to comply with all applicable laws and regulations of the Animal and Plant Health Inspection Service, the Center for Disease Control, and Export Control Administration pertaining to possession or transference of technical information, Biological Materials, pathogens, toxins, genetic elements, genetically engineered microorganisms, vaccines, and any other items subject to regulation.

Article 11. Liability

- 11.1 It is understood and agreed that neither Party to this Agreement shall be responsible to the other for any damages or injuries arising out of the conduct of activities governed by this Agreement, except to the extent that such damages and/or injuries were caused by the negligent or wrongful acts or omissions of its employees, agents, or officers. ARS' liability shall be limited by the Federal Tort Claims Act, 28 USC 2671, et seq.

Article 12. Termination

- 12.1 Either Party not in breach of this Agreement may unilaterally terminate this entire Agreement at any time by giving the other Party written notice not less than 60 calendar days prior to the desired termination date.
- 12.2 Articles 1. "Definitions"; 2. "Confidentiality"; 3. "Publications"; 7. "Ownership of Subject Inventions"; 8. "Subject Invention Information"; 9. "Use of Name or Endorsements"; 11. "Liability"; 12. "Termination"; 14. "Disputes"; 15. "Notices and Authorized Agents"; 21. "Severability"; 22. "Ambiguities"; 25. "Governing Law"; 27. "Entire Agreement"; and Sections 4.5, 6.1, 6.2, and 6.3 shall survive indefinitely the expiration or termination of this Agreement. Sections 4.3 and 4.4 shall survive the expiration or termination of this Agreement for two years.
- 12.3 Upon termination of this Agreement for any reason, ARS must not access the Cooperator Database, except to extract, if necessary, any information set forth in the Cooperator Database that was supplied to COOPERATOR under a material license agreement between ARS and COOPERATOR. Upon termination, ARS will not use any other information derived from the Cooperator Database for any other purpose, unless the COOPERATOR has provided written consent.

Article 13. Availability of Appropriations

- 13.1 The continuance of this Agreement is contingent upon availability of appropriation of funds from which expenditures may legally be made to cover ARS' contributions.

Article 14. Disputes

- 14.1 Any dispute arising under this Agreement, which cannot be readily resolved, shall be submitted jointly to the Authorized Agents identified in Article 15.

- 14.2 Each Party agrees to seek in good faith to resolve the issue through negotiation or other forms of nonbinding dispute resolution processes mutually acceptable to the Parties.
- 14.3 Pending the resolution of any dispute or claim pursuant to Article 14, the Parties agree that performance of all obligations shall be pursued diligently until such time as either Party reasonably determines that the other Party has breached this Agreement and any dispute regarding such breach cannot be resolved through negotiation or other nonbinding dispute resolution.

Article 15. Notices and Authorized Agents

- 15.1 Notices between the Parties and copies of correspondence among the scientific and/or technical representatives of each Party that interpret or may have a bearing on the legal effect of this Agreement's terms and conditions shall be sent to the Authorized Agents. Referencing Agreement Number 58-1245-3-228N thereon, send copies to:

For ARS/USDA

ARS' Authorized Agent

Mary L. Wilkins
10300 Baltimore Avenue
Building 003, Room 331, BARC-West
Beltsville, MD 20705-2350
Tel.: 301-504-7647
Fax: 3015045688
Email: Mary.Wilkins@ars.usda.gov

For Signing Party

COOPERATOR's Authorized Agent (2012-2014)

Ole Meland, Chair
Council on Dairy Cattle Breeding
6486 E Main Street
Reynoldsburg OH 43068
Tel.: 614 861 3636 Ext. 4469 Mobile 608 575 3943
Fax: 614 861 8040
Mobile: 608 575 3943
E-mail: agent@councildairycattlebreeding.com

Article 16. Limitation on ARS' Scientific Representative's Authority

- 16.1 ARS' scientific representative is authorized to perform the research and development

falling within the Scope of Agreement. This individual is not authorized to change or interpret with authority the terms and conditions of this Agreement.

Article 17. Assignments

- 17.1 Neither this Agreement nor any rights or obligations of the Parties hereto shall be assigned or otherwise transferred by either Party without the prior written consent of the other Party, which consent shall not be unreasonably withheld.
- 17.2 In no case shall COOPERATOR assign or transfer this Agreement to a party not a citizen or legal resident of the United States.
- 17.3 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 an "assignment" as contemplated by this Article 17.

Article 18. Relationship of Parties

- 18.1 ARS and COOPERATOR act in their independent capacities in the performance of their respective functions under this Agreement and neither Party is to be considered the officer, agent, or employee of the other.
- 18.2 Each Party shall allow, consistent with this Agreement and the policies and procedures of ARS and the COOPERATOR, access to their facilities, as needed.
- 18.3 Each Party shall separately provide personnel, equipment, supplies, transportation, and facilities as needed and available to meet respective responsibilities hereunder, such resources to remain the property of the assignor.

Article 19. Force Majeure

- 19.1 Neither Party shall be liable for any unforeseeable event beyond its reasonable control not caused by the fault or negligence of such Party:
 - a. which causes the Party to be unable to perform its obligations under this Agreement; and
 - b. which it has been unable to overcome by the exercise of due diligence; including but not limited to flood, drought, earthquake, storm, fire, pestilence, lightning and other natural catastrophes, epidemic, war, riot, civil disturbance or disobedience, strikes, labor dispute, failure, or sabotage of either Party's facilities or any order or injunction made by a court or public agency (a "Force Majeure Event").
- 19.2 In the event of the occurrence of such Force Majeure Event, the Party unable to perform shall promptly notify the other Party. It shall also:

- a. Use its best efforts to resume performance as quickly as possible; and
- b. Suspend performance only for such period of time as is necessary as a result of the Force Majeure Event.

Article 20. Amendment

- 20.1 If either Party desires a modification in this Agreement, the Parties shall confer in good faith to determine the desirability of such modification.
- 20.2 Such modification shall not be effective until a written amendment is signed by the Authorized Agents of both Parties.

Article 21. Severability

- 21.1 The illegality or invalidity of any provision of this Agreement shall not impair, affect, or invalidate the other provisions of this Agreement.

Article 22. Ambiguities

- 22.1 ARS and COOPERATOR agree that each Party has reviewed this Agreement and that any rule of construction to the effect that ambiguities are to be resolved against the drafting party shall not apply to the interpretation of this Agreement.

Article 23. Officials Not To Benefit

- 23.1 No delegate to or member of the Congress of the United States of America shall have a part of or benefit from this Agreement. This requirement does not include entities or organizations if this Agreement is entered into for the entity's or organization's general benefit.

Article 24. Subcontracting Approval

- 24.1 ARS shall give prior notice to COOPERATOR, including details of the contract or other arrangement, before obtaining or using the services of a Third Party via contract or otherwise.
- 24.2 This Article 24 is to assure that this Agreement is not breached and rights in Subject Inventions and Confidential Information are not compromised.

ARS must not disclose Confidential Information to any Third Party contractor unless:

- a. such Third Party needs to know the Confidential Information to assist ARS in the purpose for which the Third Party was contracted,
- b. ARS informs such Third Party in writing of the confidential nature of the

Confidential Information, and

- c. such Third Party is subject to confidentiality duties or obligations to ARS that are no less restrictive than the terms and conditions of this Agreement.

Article 25. Governing Law

- 25.1 The construction, validity, performance, and effect of this entire Agreement shall be governed by the laws applicable to the Government of the United States of America as practiced in the Federal Courts located in the District of Columbia.

Article 26. Contingencies

- 26.1 While this agreement is in effect, COOPERATOR in its discretion will voluntarily make available to ARS datasets for the agreed research purposes under this Agreement. COOPERATOR has complete discretion to determine what aspects of data, including but not limited to Phenotypic Data, Biological Material, Genomic Data, and Proteomic Data, it makes available to ARS. COOPERATOR will obtain a written release from all parties providing data to the COOPERATOR.
- 26.2 Execution of this Agreement is contingent upon the Parties agreeing to the Statement of Work.

Article 27. Entire Agreement

- 27.1 This Agreement constitutes the entire agreement between COOPERATOR and ARS and supersedes all prior agreements and understandings between them with respect to its subject matter including without limitation the prior agreements.
- 27.2 Any representations, promise, or condition in connection with such subject matter, which is not incorporated in or contemplated by this Agreement, shall not be binding upon either Party.
- 27.3 No modification, renewal, extension, waiver, or termination of this Agreement or any of its provisions shall be binding upon the Party against whom enforcement of such modification, renewal, extension, waiver, or termination is sought, unless made in writing and signed on behalf of such Party by that Party's Authorized Agent.
- 27.4 As used herein, the word "termination" includes any and all means of bringing to an end prior to its expiration by its own terms of this Agreement, or any provision thereof, whether by release, discharge, abandonment, or otherwise.

Schedule 1 Statement of Work

I. Introduction

Since the early 1900's, the dairy industry and the USDA-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 the 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 AIPL 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.

Genomics now play a vital role in understanding and improving the genetic merit of a host of organisms. Keeping abreast of the science, USDA-ARS and its collaborators developed a genotyping panel of 54,000 DNA markers called single-nucleotide polymorphisms (SNPs) and later a higher density (777,962 SNPs) chip and several low-cost lower density (2,900; 6,909; and 8,654 SNPs) chips. The genotyping chips allow for the collection of Genomic Data of Dairy Animals that when combined with Phenotypic Data provide accurate Estimates of Genetic Merit early in life. Early and accurate information may result in much more rapid improvement in efficiency of milk production and can be important for improving feed efficiency, robustness, disease resistance, and product quality and composition.

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 resulting products for the benefit of dairy producers and the consuming public by transferring the research knowledge of USDA-ARS scientists to COOPERATOR on the appropriate genetic models and computational procedures for the analysis of the Phenotypic and Genomic Data contained in the Cooperator Database controlled by COOPERATOR.

The Parties will:

- A. Continue collection of genotypes (specifically SNPs), phenotypes, and begin collection of new phenotypes and Proteomic Data to improve the accuracy and comprehensiveness of the Cooperator Database accessed for the purposes of the CGE.
 - 1. Increase the accuracy of ancestry information by using SNP genotypes to verify and to assign parentage.
 - 2. Obtain additional Phenotypic Data on health, management, efficiency, conformation, and product-related traits to improve the CGE.
- B. Characterize phenotypic measures of dairy practices, and provide the dairy industry, for a fee if appropriate, with information needed to determine the impact of various herd management decisions on profitability.

- C. Improve accuracy of prediction of economically important traits currently evaluated, develop genetic evaluations for new traits, and investigate methods to incorporate high-density Genomic Data.
 - 1. Improve methodology for calculation of genome-enhanced breeding values using SNP genotypes.
 - 2. Develop methodology for accurate genetic evaluations for traits currently evaluated and new traits such as disease resistance, feed efficiency, functional conformation, robustness, and product composition and quality.

III. Approach and Methodology

- A. Collect Phenotypic, Genomic, and Proteomic Data.
- B. Edit collected data for accuracy prior to inclusion in the Cooperator Database and maintain data in a database and to support CGE.
- C. Analyze collected data through the CGE to produce Estimates of Genetic Merit.
- D. Distribute Estimates of Generic Merit.

IV. AIPL Responsibilities

- A. AIPL will research data quality issues and develop methods to insure data added to the Cooperator Database are of high quality.
- B. AIPL will develop effective analysis procedures for CGE to compute Estimates of Genetic Merit of Dairy Animals from datasets in the Cooperator Database provided by COOPERATOR.
- C. AIPL will periodically publish documentation of enhancements for procedures used to compute Estimates of Genetic Merit of Dairy Animals and provide summaries of AIPL Algorithms to others for educational purposes as appropriate.
- D. AIPL will determine when the information and potential benefit is sufficient to develop AIPL Algorithms for new traits.

V. COOPERATOR Responsibilities:

- A. Continue to collect Phenotypic and Genomic Data and collect Proteomic Data from any party with a release providing data to the Cooperator Database.
- B. Edit and maintain collected data:

1. Assure data are edited for accuracy prior to inclusion in the Cooperator Database.
 2. Conduct an effective quality certification program to assure that only high quality data are added to the Cooperator Database.
 3. Maintain and control the Cooperator Database accessed as part of CGE with access by USDA-ARS only for non-commercial research purposes.
- C. Carry out the CGE applying appropriate analysis procedures to produce Estimates of Genetic Merit from data in the Cooperator Database.
- D. Distribute Estimates of Genetic Merit, for a fee if appropriate.
- E. Host COOPERATOR web site, for a fee if appropriate, for access by those agreeing to the terms and conditions of the COOPERATOR.
- F. Supply its own administrative support as the USDA-ARS funded program support assistant is responsible for USDA-ARS support only.
- G. Supply its own e-mail and web addresses and Internet connection.
- H. Within two years of the Effective Date of this agreement, the COOPERATOR will supply a computer environment capable of supporting the increasing workload of their responsibilities under this agreement.

Appendix A. Software

1. Edits (validates lactation and pedigree data and update database).
2. Edclob (validates genotypes and updates database).
3. Extract (selects usable records for each trait from database).
4. XM (calculates traditional evaluations using across-breed animal model).
5. AM (uses animal model software from University of Georgia for calving ease and fertility and from University of Gembloux, Belgium, for type traits).
6. Genomics (calculates genomic evaluations and prepares monthly files for distribution).
7. Distrib (computes net merit index, updates evaluation database, and prepares formats 38, 105, etc.).
8. Interbull (prepares, validates, and sends files to Interbull; receives and inspects multitrait, across-country evaluations).
9. Queries (displays information from database on web and at command line; designated as “get” series).
10. Run (executes a series of programs that include checking dependencies, return codes, and number of processors).

Appendix B

Prior Agreements

1. Memorandum of Understanding Agreement; No. 58-1265-0-009M (CDCB) expiration date 12/31/2014.