Washington
Tree Fruit Research
Commission

1719 Springwater Avenue, Wenatchee WA 98801

10 Dec 2018

Dr. Dorrie Main
Dept of Horticulture
Washington State University
Pullman, WA 99164-6414

Dear Dorrie:

I wish to express my organization's strongest possible support for renewal of your NRSP project: "National Database Resources for Crop Genomics, Genetics and Breeding Research". The U.S. rosaceous crop industry is quite diverse, including such crops as almond, apple, blackberry, peach, pear, plum, raspberry, rose, strawberry, sweet cherry, and tart cherry, with commercial production areas across the entire U.S. and local production of some importance in every single state. Despite such apparent agricultural and geographic diversity, each of those crops has a common strong interest in plant improvement via genomics, genetics, and breeding. Fortunately, each has benefitted immensely for the work you and your team have performed in the past the years to develop and build up the Genome Database for Rosaceae (GDR), as well as the work performed in the NRSP10 project. The same is true for the many other ag commodities that have become part of your work at the GDR and the NRSP10.

Now, we can see that stakeholders in these industries are benefitting from both these projects -- private and public investments have really begun to pay off. Our rosaceous crop research community now has access to high quality, well-curated genomic, genetic, and breeding data as well as the cutting-edge bioinformatics tools you and your team have developed. The GDR is now the acknowledged international resource for our crop groups. This is certainly an endorsement by your peers that the GDR is a solid scientific accomplishment. NRSP10 has significantly enhanced is growth and impact.

Looking back, it has been very encouraging to see the move from crop-specific information repositories to a vital and dynamic resource that helps translate massive DNA datasets into DNA information useful in our research communities. On this strong base, we foresee the more efficient and effective development and commercialization of superior new rootstock and scion cultivars. In addition, we strongly support the new resources GDR and NRSP10 offer to scientists working in genomics and genetics and many other biological disciplines.

Phone 509-665-8271 FAX 509-663-5827

The renewal proposal continues in its quest to procure the necessary funding to not just maintain, but to further enhance the GDR and its portfolio of tools. We are far beyond the "good old days" when simply sequencing part of a genome was foundational work and highly fundable by federal agencies. Further, federal funding for ag research is facing uncertain times. It seems obvious that we must vigorously pursue collaboration among stakeholder organizations and research communities of disparate crop groups to acquire necessary long-term support, as you have been doing in this project.

The separation of crop- specific and core research activities provides an opportunity for industry and research stakeholders to help set priorities and provide funding for bioinformatics work with outcomes most relevant to one or only a few crops. On the other hand, core research activities that build and enhance bioinformatics knowledge and applications of more general utility have worked well in your NRSP project and merit consideration for renewal by SAES Directors.

For example, your work has led to software platforms and protocols useful in all the crop groups involved in this proposal. The work you and your colleagues have led on Tripal software has paid off. Many existing databases, including GDR, have been converted to Tripal. Bioinformatics tools developed in one crop group have been applied to other crop groups. This is evidence your approach is both scientifically exciting and financially practical.

We cannot guess how funding for ag research will evolve, but we look forward to working with you to develop a funding model for the GDR that at least gives us a chance to maintain your momentum and create a hybrid model that offers our crop group and research communities the opportunity to work with a stable, robust, world-leading resource. Your business plan and two-level strategy seems logical and practical.

We continue to strongly support the work you propose. Should it be funded, we commit to working with you to advance both core and crop-specific activities. We believe it is reasonable and fair to expect industry and research stakeholders to participate in directly supporting the work you and your team propose. We also hope the SAES Directors give this renewal careful consideration and the opportunity to contribute to the mission of the NRSP.

Sincerely,

Ines Hanrahan

Ines Hanrahan, PhD
Executive Director
Washington Tree Fruit Research Commission

December 14, 2018

Dr. Dorrie Main
Professor of Bioinformatics
Washington State University
Pullman, WA 99164

Dear Dorrie,

The U.S. Rosaceae Executive Committee (RosEXEC) would like to offer our organizations' strongest support for your NRSP10 proposal renewal "National Database Resources for Crop Genomics, Genetics and Breeding Research".

The U.S. RosEXEC is an elected body of scientists, across disciplines, which represent the interests of U.S. Rosaceae academia, government and industry. It also includes three international liaisons. Our mission is to (1) serve as a communication and coordination focal point for the US Rosaceae genomics, genetics and breeding community (2) define research priorities based on input from the industry and research community (3) facilitate scientific interaction and foster dynamic research teams (4) promote research priorities and (5) coordinate educational efforts from the research community to the industry and the public. Rosaceae crops continue to grow in economic impact and consumer consumption. In 2016, crops from this important crop family contributed $15.5 billion (value of production) to the US economy.

The oldest of the NRSP10 databases, the Genome Database for Rosaceae (GDR) has been an essential resource for facilitating Rosaceae research and helping to build our community into a well-organized, collegial body of scientists. Its continued development and support is critical to house the immense volume of genomic, genetic and breeding data the community continues to generate at an unprecedented scale through both large projects and individual laboratories. Support for the continuation of GDR is one of our highest priorities; it has served us very well for fifteen years both as a research resource and a communication portal. This includes hosting the annual RosEXEC elections through the website and the 2nd and 7th International Rosaceae Genomics Conference.

Since 2014, the ***RosEXEC has served as the official advisory board for GDR***. In this role we advise on priorities, inform on new data and projects and assist in planning funding proposals for GDR. We receive quarterly reports and annual reports about work completed in that period and plans for the next quarter. These are provided in advance of our meetings so we have time to review them and can provide constructive feedback at each meeting including our annual in-person meeting at PAG. We are very satisfied with the progress made in GDR over the last 4 years of the current NRSP10 grant, with most of the deliverables exceeding stated objectives. The RosEXEC members as well as the GDR team also engage the larger community to gather

feedback and guidance in prioritizing activities. We have been integrally involved in developing the next set of objectives for this 5-year NRSP10 proposal. We recognize the need to develop a community-led and accepted sustainability plan for GDR as it is such a critical resource for our community. We will work diligently with the sustainability assessment team to identify what options have most potential for GDR and be active in helping implement them where possible.

Thank you for all your team has done for the community over the last fifteen years of GDR and the other underserved NRSP10 target crop databases. We wish you every success for this critically important proposal.

Sincerely,

Mercy Olmstead, Ph.D.
Chair, U.S. RosEXEC
Watsonville, CA

December 17, 2018

Dorrie Main
Professor of Bioinformatics
Dept. of Horticulture
Washington State University
Pullman, WA 99163

Dear Dorrie;

I wish to express Cotton Incorporated's continued whole hearted endorsement for the renewal proposal for NRSP10 titled "National Database Resources for Crop Genomics, Genetics and Breeding Research". The effort your team has led in the past few years to develop genome databases for several crops, especially cotton, is of critical value to our research community. The impressive growth and use of CottonGen over the first four years of NRSP10 is testament to the quality of data and expanding tools available to the cotton research community. Breeders are now able to employ the benefits of the genomics revolution toward solving the increasingly complex production problems for growers. Housing the International Cotton Genome Initiative (ICGI) within CottonGen has enabled improved communication within the international cotton community. The database hosts biennial ICGI elections and helped organize and host submission of abstracts for the 2018 ICGI conference which was held in Edinburgh, Scotland.

The CottonGen Steering committee, representing industry, government and academic scientific stakeholders, is provided with quarterly progress reports and offers regular guidance on priorities for the database. Feedback from the Steering Committee and wider community has shaped the objectives for the next five years of NRSP10. We are supportive of all activities and will work with you toward establishing sustainability options for CottonGen.

As you know, in 2009 we decided that the two existing cotton community databases, CottonDB and Cotton Marker Database, did not meet the cotton research communities' needs largely because of the legacy systems both used. We investigated several crop database groups to decide where best to invest our grower provided funds. The community chose your team because of the efficiencies gained by using and further developing the standardized Tripal platform and your emphasis on developing tools for breeding. Your decision to hire the CottonDB curator and allow her to work remotely from Texas so she could have continued direct access to cotton researchers at USDA-ARS and Texas A&M has proven to be a wise decision. The CottonGen Steering Committee and the cotton community are very satisfied with the database, and it is our intention to continue to support it in the future. Between 2011 and 2018 we provided over $800,000 dollars to support CottonGen with another $363,000 committed for 2019-2020.

Cotton Incorporated

6399 WESTON PKWY CARY, NC 27513 919.678.2200 919.678.2230 COTTONINC.COM

We continue to view your NRSP proposal as a natural evolution of the databases for the five crop groups targeted. While the crops are distinctly different, in aggregate they are vitally important across the entire country and feature in a range of research programs at land grant universities, USDA-ARS, and private industry partners. Despite the diversity, each of these crops has a need for a world-class, dynamic, accessible genome database. Your team has provided the cotton community this bioinformatics resource and in so doing, has created a unique software platform.

Please accept this letter as an indication of Cotton Incorporated's continued, firm commitment to support your NRSP renewal proposal.

Sincerely,

Don C. Jones, Ph.D.
Director of Agricultural Research

Cotton Incorporated

6399 WESTON PKWY CARY, NC 27513 919.678.2200 919.678.2230 COTTONINC.COM

United States Department of Agriculture

Research, Education, and Economics
Agricultural Research Service

10 December 2018

Dr. Dorrie Main
Department of Horticulture
Washington State University
Pullman, WA 99164-6414

Dear Dorrie

As the chair of the newly formed Cool Season Food Legume Genome Database Steering Committee, comprised of academic, government and industry stakeholders, I would like to express our strongest support for your NRSP10 renewal proposal. We have provided input on the objectives and activities in the proposal and support the final version included in the proposal.

Established in 2012, the Cool Season Food Legume Genome Database (CSFL, https://www.coolseasonfoodlegume.org) provides curated and integrated genomic, genetics and breeding data and analysis tools to enable basic, translational and applied research in pea, lentil, chickpea and fava bean crops. It's growth over the last 4 years has been impressive, it is current with all published genomic and genetic data (extracted from literature), provides easy to use data management and analysis tools for breeding programs at no cost, and delivers access to analyzed data distilled into useable information for genomicists, physiologists, molecular geneticists, and breeders.

We look forward to working with your team to ensure CSFL continues to enable pea, lentil, chickpea and fava bean research and in particular can help us utilize the volume of big data that is now being generated for our crops toward accelerated research discovery and crop improvement.

Sincerely

Rebecca McGee, Ph.D.
Chair of the CSFL Steering Committee

Pacific West Area – Grain Legume Genetics and Physiology Research
305 Johnson Hall Washington State University
Pullman, WA 99164
(509) 335-0300 • Fax (509) 335-7692
rebecca.mcgee@ars.usda.gov

NC STATE UNIVERSITY

College of Agriculture and Life Sciences
NC Research Campus
600 Laureate Way
Kannapolis, NC 28081
704.250.5400
704.250.5409 (fax)

December 18, 2018

To Dorrie Main, PhD
Department of Horticulture
Washington State University
45 Johnson Hall
Pullman, WA 99164-6414

Dear Dr. Main,

I am writing this letter to express my strong support for the NRSP Project entitled: "**National Database Resources for Crop Genomics, Genetics and Breeding Research**".

At North Carolina State University my program focuses on developing genetic and genomic resources to study economically important traits with an emphasis on nutritional related traits (e.g. anthocyanin, carotenoid accumulation). I am coordinating a SCRI-CAP proposal focusing on Vaccinium crops, specifically blueberry and cranberry. The project will involve over 32 US Co-PI's and collaborators, including all blueberry and cranberry breeding programs, genomics scientists and is supported by 24 stakeholder organizations representing thousands of stakeholders from all major blueberry and cranberry production regions.

The Genome Database for Vaccinium that your team manage represents a strategic resource for any past, ongoing and future blueberry and cranberry genetic-genomic based projects. Considering the amount of data generated in genomic-breeding based projects and the financial investments involved (public and private), having a centralized computational infrastructure such as the GDV is a strategic need to avoid duplication of effort and efficiently translate such information to end users. As we plan new projects, member of our community can rely on this infrastructure and focus our efforts and resources to plan activities that can translate scientific knowledge that we will gain in the project to end users. Your involvement in the VacciniumCAP proposal represents a great example of such a partnership. As you know the primary objective of our VacciniumCAP proposal will be to expand DNA based resources to facilitate the development of blueberry and cranberry cultivars with improved fruit quality attributes. We have allocated funding to support data curation in the database to your team, while the GDV infrastructure is already available at no cost for our project. As discussed during our planning activities, such a partnership has already been established with many other blueberry and cranberry scientists, and provides an incredible added value to our projects and your proposal.

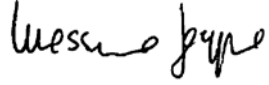
Looking at your objectives and planned activities, it is encouraging to see that in the NRSP10 renewal proposal you are planning to expand the Breeding Information Management System

(BIMS) to include more analysis capability to the already established BIMS implemented in GDV and the other NRSP10 databases Obj 4 of your proposal. These tools can be used to effectively translate massive DNA and phenotypic datasets into useful information for the research and breeding community. On this strong base, we foresee the more efficient development and release of new improved blueberry and cranberry cultivars. In addition, use of GenSAS for community curation of reference sequences, access to an epigenomics visualization tool and the ability to export data into other bioinformatics platforms (such as Galaxy) will facilitate data analysis for any scientists working in the Vaccinium crops.

Interaction and feedback that we will collect from our Vaccinium community will serve to advise priorities, inform on new data and projects and assist in planning funding proposal for GDV. In this regard, confirm that I commit to serve in the GDV Steering committee, to provide you such feedback and advise how the objectives of your proposal can effectively be used by our community.

I look forward to being involved in an advisory capacity through my attendance at both an annual meeting and conference calls. Good luck with your proposal.

Sincerely,



Massimo Iorizzo, Ph.D.
Assistant Professor

USDA
United States Department of Agriculture

Research, Education, and Economics
Agricultural Research Service

Prof. Dorrie Main, PhD
Department of Horticulture
Washington State University
45 Johnson Hall
Pullman, WA 99164-6414

Dear Dr. Main,

I am writing this letter to express my strong support for the NRSP Project entitled: "**National Database Resources for Crop Genomics, Genetics and Breeding Research**".

Located at the University of Wisconsin-Madison my USDA, ARS program focuses on carrot breeding and genetics and my program leads multiple efforts to develop DNA based tools that can facilitate carrot breeding programs in the U.S. and globally. I am coordinating a SCRI-SREP project focusing on develop genotyping and phenotyping tools to advance carrot breeding programs. The project involves 14 US Co-PI's and collaborators from public carrot breeding, outreach, and research programs, and 18 seed companies, processors, and growers that represent at least 80% of the commercial U.S. carrot crop.

As part of the project we are generating large amounts of data, that is critical to have at a centralized hub to store and make the data available to the carrot breeding, production, and research community. To store and organize our data we have adopted and implemented in our server the database platform that your team has developed as part of the NRSP10. We very much benefit from and appreciate your willingness to provide a robust and easy-to-use bioinformatics infrastructure, which have allowed us to allocate funding more towards the implementation of the tools rather then re-developing a tool that has already been developed for other crops.

Your input in our effort to develop a carrot database represents a clear example of how the tools developed as part of the NRSP10 represent a critical resource, even beyond the crops you have included in your proposal. This clearly show that the activities of your project are relevant at national level.

For these reasons I strongly support your project. Good luck with your proposal.

Sincerely,

Philipp W. Simon
Research Geneticist
and Professor of Horticulture

Vegetable Crops Research Unit, Midwest Area
Dept of Horticulture - University of Wisconsin
1575 Linden Drive - Madison, WI 53706
(phone) 608-262-7922 • (fax) 608-262-4743