**Appendix 1**

Sub-projects, collaborators, and team leaders for the W-3150 Project from 2015 to 2020.

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| **Sub-Projects**† | **Collaborating Institutions** | **Collaborators** | **Team Leader‡** | **Objective¶** |
| Objective 1: Improving yield potential; Subobjective 1a. Resistance and pathogen variability for biotic stresses |
| Common Bacterial Blight and bacterial wilt Resistance | U.C. Davis, U. of Puerto Rico, North Dakota State U., U. of Nebraska, ARS | Gilbertson, Beaver, Osorno, Miklas, Porch**,** Zapata, Urrea, Pasche | Miklas  | 1 |
| Halo Blight, Brown Spot Resistance | U.C. Davis, North Dakota State U., U. of Nebraska, ARS | Gilbertson, Miklas, Osorno, Urrea | Osorno | 1 |
| Anthracnose Resistance | North Dakota State U., Michigan State U. | Kelly, Osorno, Pasche | Kelly | 1 |
| Root Rot  | Oregon State U., U. of Puerto Rico, North Dakota State U., U. of Nebraska, Michigan State U., ARS | Kelly, Osorno, Steadman, Urrea, Myers, Pasche, Estevez, Porch | Schwartz, Steadman, Urrea | 1 |
| Rust Resistance | U. of Puerto Rico, North Dakota State U., Colorado State U., U. of Nebraska, Michigan State U., ARS, Delaware State U. | Beaver, Brick, Osorno, Kelly, Miklas, Pastor-Corrales, Steadman, Urrea, Kalavacharla | Pastor-Corrales | 1 |
| White Mold Resistance | North Dakota State U., U. of Nebraska, Michigan State U., ARS, Oregon State U. | Osorno, Griffiths, Kelly, Miklas, Myers, Steadman, Urrea, McClean | Steadman and Miklas | 1 |
| Subobjective 1b. Abiotic stresses |
| Drought Tolerance | U. of Nebraska, Michigan State U., ARS, U.C. Davis | Porch, Urrea, Kelly, Miklas, Gepts | Urrea, Porch | 1, 3 |
| Heat Tolerance | U. of Puerto Rico, U. of Nebraska, ARS, Cornell University, U.C. Davis | Porch, Griffiths, Beaver, Urrea, Gepts | Porch, Urrea | 1, 3 |
| Subobjective 1c. Characterization/utilization of exotic germplasm | Colorado State U., UC Davis, U. of Nebraska, Michigan State U., ARS, U. of Puerto Rico | Gepts, Kelly, Miklas, Pastor-Corrales, Porch, Urrea, Beaver, Cichy | Porch, Kisha | 1, 2, 3 |
| Subobjective 1d. Genomics/marker assisted selection |
| SNP Chip and SNP Calling Parameters | Delaware State U., U.C. Davis, U. of Nebraska, Michigan State U., ARS, Oregon State U., North Dakota State U. | Gepts, Miklas, Myers, Kelly, Urrea, McClean, Kalavacharla, Porch, Hart | McClean | 1, 2 |
| Genotyping-by-sequencing | ARS, North Dakota State U., U.C. Davis | Miklas, Porch, Hart, McClean, Gepts | Gepts | 1, 2 |
| Association mapping | ARS, Michigan State, North Dakota State, U.C. Davis | Kelly, Miklas, McClean, Porch, Hart, Gepts, Cichy | McClean |  |
| PhaseolusGenes marker database | U.C. Davis, North Dakota State U., Michigan State U.,  | Gepts, McClean, Kelly | Gepts | 1, 2 |
| Epigenomics | Delaware State U., U.C. Davis | Kalavacharla, Gepts | Kalavacharla | 1 |
| Subobjective 1e. National/regional nurseries |
| Midwestern Regional Performance Nursery | Colorado State U., U. of Nebraska, Michigan State U., North Dakota State U. | Brick, Osorno, Kelly, Urrea  | Osorno | 1 |
| National Cooperative Dry Bean Nursery | Colorado State U., U. of Nebraska, Michigan State U., North Dakota State U., ARS | Brick, Osorno, Kelly, Pastor-Corrales, Steadman, Miklas, Urrea, Halseth, Cichy | Miklas | 1 |
| National Rust Nursery | Colorado State U., U. of Nebraska, ARS | Pastor-Corrales, Steadman, Brick | Pastor-Corrales  | 1 |
| National White Mold Nursery | U. of Nebraska, Michigan State U., North Dakota State U., Oregon State U., ARS | Kelly, Miklas, Myers, Steadman, Urrea, Wunsch | Steadman | 1 |
| Puerto Rico Cooperative Winter Nurseries | U. of Puerto Rico, U. of Nebraska, Michigan State U., North Dakota State U. | Beaver, Osorno, Kelly, Urrea, Steadman | Beaver | 1 |
| Western Regional Bean Trial | Colorado State U., ARS, U. of Nebraska | Brick, Miklas, Urrea | Urrea | 1 |
| Cooperative Drought Bean Nursery | U. of Nebraska, Michigan State U., UC Davis, Colorado State U., ARS | Urrea, Porch, Kelly, Brick, Miklas, Gepts | Urrea and Porch | 1 |
| Objective 2. Analyze, document, and utilize genomic resources to enhance nutritional qualities and identify diversity within *Phaseolus* to facilitate development of nutritious food products to promote human health and well-being |
| **Sub-objective 2a.** Nutritional Value  | ADM, Maryville State U., Iowa State U., Colorado State U., UC Davis, U. of Nebraska, ARS, Oregon State U. | Brick, Gepts, Cichy, Rueda, Urrea, Schlegel, Thompson, Khwaja, Kisha, Winham | Grusak | 2, 3 |
| **Sub-objective 2b.** Processing quality | ADM, U. of Nebraska, ARS | Urrea, Rueda | Cichy | 2, 3 |
| **Sub-objective 2c.** Nutritional databases | ARS, ADM, U. of Nebraska, Colorado State U. | Grusak, Schlegel, Brick, Haytowitz | Rueda | 2, 3 |
| **Sub-objective 2d.** Health effects | Washington U., ADM, Iowa State U., Colorado State U., ARS, U. of Nebraska | Rueda, Thompson, Grusak, Manary, Naratto, Winham | Schlegel, Brick | 2, 3 |
| Objective 3. Implement sustainable and profitable agricultural systems that improve bean seed yield, conserve natural resources and protect the environment |
| **Sub-objective 3a.** Integrated Pest and Disease Management | Oregon State U., U. of Nebraska, U. of Puerto Rico, North Dakota State U., Michigan State U., ARS | Osorno, Kelly, Urrea, Myers, Estevez, Pasche, Steadman, Pastor-Corrales | Pasche | 1, 3 |
| **Sub-objective 3b.** Improved fixation, acquisition and utilization of nitrogen | U. of Puerto Rico, Penn. State U., North Dakota State U., Michigan State U., ARS | Estevez, Lynch, Osorno, Miklas, Kelly, Porch, Beaver | Estevez, Beaver | 1, 3 |
| **Outreach**  | U. of Nebraska, ADM, Colorado State U. | Brick, Miles, Rueda, Urrea  | Rueda |  |

† The Midwestern Regional Performance Nursery, National Rust Nursery, National Cooperative Dry Bean Nursery, National White Mold Nursery, Western Regional Bean Trial, Cooperative Drought Nursery and Winter Nursery are integral parts of the W-3150 project.

**‡** Team Leaders are responsible for coordination, discussion, and preparation of their Sub-Project documents and progress reports.

¶ Objectives:1. Improving bean yield potential by incorporating resistance/tolerance to major biotic and abiotic stresses, broadening the genetic base, implementing/integrating genomic resources and coordinating field trial nurseries; 2. Analyze, document, and utilize genomic resources to enhance nutritional qualities and identify diversity within Phaseolus vulgaris to facilitate development of nutritious food products to promote human health and well-being; and 3. Implement sustainable and profitable agricultural systems that improve bean seed yield, conserve natural resources, and protect the environment.