| PI Name              | PI College | Pl Department                                  | Co-PI(s)                      | Awarded Ai | mount      | Title  | Sponsor Name                          |
|----------------------|------------|--|-------------------------------|------------|------------|--|---------------------------------------|
| William Wilson       | AES & EXT  | AES Agribusiness & Applied<br>Economics        |                               | \$         | 20,000.00  | Strategy & Analysis for GM Wheat Collaborations  | ND Wheat Commission                   |
| William Wilson       | AES & EXT  | AES Agribusiness & Applied                     |                               | \$         | 18,000.00  | Market Development Support   | ND Wheat Commission                   |
| Gregory Lardy        | AES & EXT  | AES Agricultural & Biosystems Engineering      | John Nowatzki<br>Xin Sun      | \$         | 863,092.00 | Advanced UAS/UAV Application and Data<br>Management Systems and Bioinformatics<br>Tools Integrate GxExM Data for Precision<br>Agricultural Management                      | Agricultural Research<br>Service      |
| Halis Simsek         | AES & EXT  | AES Agricultural &<br>Biosystems Engineering   |                               | \$         | 26,822.00  | Effects of Different Water Table Depth on<br>Plant Water Consumption, Yield, Quality<br>Parameters and Antioxidant Enzyme Activities<br>in Wheat Plant: A Lysimeter Study. | ND Wheat Commission                   |
| Gregory Endres       | AES & EXT  | AES Carrington Research/Extension Center       | Krik Howatt<br>Michael Ostlie | \$         | 14,700.00  | Fall-seeded Cover Crop Tolerance to Soybean<br>Herbicides  | ND Soybean Council                    |
| Gregory Endres       | AES & EXT  | AES Carrington<br>Research/Extension Center    |                               | \$         | 4,900.00   | Corn Starter Fertilizer Trial at the Carrington<br>Research Extension Center   | ND Corn Utilization<br>Council        |
| Birgit Pruess        | AES & EXT  | AES Microbiological<br>Sciences                |                               | \$         | 5,000.00   | Treating Ground Beef Meat for Longer Shelf Life  | ND Beef Commission                    |
| Christopher Augustin | AES & EXT  | AES North Central<br>Research/Extension Center | Ryan Buetow                   | \$         | 14,056.00  | Beet Lime Application Effects on Soil pH and Hard Red Spring Wheat   | ND Wheat Commission                   |
| Thomas Stefaniak     | AES & EXT  | AES North Central<br>Research/Extension Center | Richard Horsley               | \$         | 100,000.00 | Pea and Lentil Cultivar Development  | Northern Pulse Growers<br>Association |
| Robert Brueggeman    | AES & EXT  | AES Plant Pathology                            |                               | \$         | 13,175.00  | FHB Management in Barley: QTL Deployment and Phenotyping   | Agricultural Research<br>Service      |
| Luis Del Rio Mendoza | AES & EXT  | AES Plant Pathology                            |                               | \$         | 35,424.00  | Role of WRKY Transcription Factors in<br>Quantitative Resistance to Sclerotinia<br>Sclerotiorum  | Agricultural Research<br>Service      |
| Andrew Friskop       | AES & EXT  | AES Plant Pathology                            |                               | \$         | 8,060.00   | Evaluation of Fungicide Seed Treatments<br>Under Different Tillage, Crop Rotations and<br>Soil Conditions  | ND Wheat Commission                   |
| Zhaohui Liu          | AES & EXT  | AES Plant Pathology                            |                               | \$         | 6,555.00   | Investigating Prevalence of Tan Spot Pathogen Race 4 in Durum Wheat  | ND Wheat Commission                   |
| Zhaohui Liu          | AES & EXT  | AES Plant Pathology                            |                               | \$         | 30,000.00  | Transferring of a Resistance Gene from<br>Triticale to Wheat for Bacterial Leaf Streak   | ND Wheat Commission                   |

| PI Name       | PI College | PI Department       | Co-PI(s)   | Awarded Ar | mount      | Title   | Sponsor Name                            |
|---------------|------------|---------------------|--|------------|------------|---|---|
| Zhaohui Liu   | AES & EXT  | AES Plant Pathology |  | \$         | 21,480.00  | Development of a Quantitative PCR-method to<br>Detecting Wheat Bacterial Leaf Streak<br>Pathogen                          | ND Wheat Commission                     |
| Julie Pasche  | AES & EXT  | AES Plant Pathology | Eric Eriksmoen<br>Audrey Kalil<br>Michael H Ostlie<br>John Rickertsen<br>Blaine Schatz | \$         | 488,415.00 | Building a Better Lentil from the Ground Up   | USDA-NIFA / Montana<br>State University |
| Shaobin Zhong | AES & EXT  | AES Plant Pathology |  | \$         | 30,000.00  | FHB Resistance in Wheat   | ND Wheat Commission                     |
| Shaobin Zhong | AES & EXT  | AES Plant Pathology |  | \$         | 30,000.00  | CRISPR/Cas9 Genome Editing  | ND Wheat Commission                     |
| Xiwen Cai     | AES & EXT  | AES Plant Sciences  | Shaobin Zhong  | \$         | 104,301.00 | Characterization of Resistance to Fusarium<br>Head Blight in Wheat and its Relatives                                      | Agricultural Research<br>Service        |
| Xiwen Cai     | AES & EXT  | AES Plant Sciences  |  | \$         | 35,000.00  | Enriching the Gene Pool for Wheat<br>Improvement  | ND Wheat Commission                     |
| Elias Elias   | AES & EXT  | AES Plant Sciences  |  | \$         | 100,000.00 | Expand Durum Breeding Project   | ND Wheat Commission                     |
| Elias Elias   | AES & EXT  | AES Plant Sciences  |  | \$         | 18,100.00  | Developing Durum Wheat Germplasm with<br>Low Cadmium Uptake   | ND Wheat Commission                     |
| Andrew Green  | AES & EXT  | AES Plant Sciences  |  | \$         | 125,000.00 | Hard Red Spring Wheat Breeding  | ND Wheat Commission                     |
| Kirk Howatt   | AES & EXT  | AES Plant Sciences  | Caleb Dalley<br>Brian Jenks<br>Michael Ostlie  | \$         | 10,000.00  | Preharvest Options for Desiccation of Crop and Weed Biomass in Wheat  | ND Wheat Commission                     |
| Herman Kandel | AES & EXT  | AES Plant Sciences  |  | \$         | 12,000.00  | Syngenta Syso Project   | Syngenta Crop Protection Inc.           |
| Xuehui Li     | AES & EXT  | AES Plant Sciences  |  | \$         | 35,620.00  | Genetic Characterization and Selection for<br>Fusarium Head Blight Resistance in Durum<br>Wheat                           | Agricultural Research<br>Service        |
| Xuehui Li     | AES & EXT  | AES Plant Sciences  |  | \$         | 3,000.00   | Genomics-Assisted Backcross to Improve Grain<br>Yield in Durum Wheat under Drought<br>Environment in Western North Dakota | ND Wheat Commission                     |
| Xuehui Li     | AES & EXT  | AES Plant Sciences  |  | \$         | 10,000.00  | Recurrent Genomic Selection to Accelerate<br>Breeding Population Improvement in Spring<br>Wheat                           | ND Wheat Commission                     |

| PI Name       | PI College | PI Department      | Co-PI(s)                      | Awarded An | nount      | Title  | Sponsor Name                     |
|---------------|------------|--------------------|-------------------------------|------------|------------|--|----------------------------------|
| Xuehui Li     | AES & EXT  | AES Plant Sciences |                               | \$         | 43,080.00  | Implementation of Genomic Selection to<br>Improve Yield and Quality of Durum Wheat                                 | ND Wheat Commission              |
| Frank Manthey | AES & EXT  | AES Plant Sciences |                               | \$         | 30,000.00  | Identifying Genotypic Difference in Kernel<br>Bleaching of Durum Wheat   | ND Wheat Commission              |
| Frank Manthey | AES & EXT  | AES Plant Sciences |                               | \$         | 25,000.00  | Peroxidase Activity and Pasta Brightness   | ND Wheat Commission              |
| Frank Manthey | AES & EXT  | AES Plant Sciences |                               | \$         | 42,500.00  | Durum Quality Research Support   | ND Wheat Commission              |
| Gideon Marais | AES & EXT  | AES Plant Sciences |                               | \$         | 42,070.00  | Improvement of the FHB Resistance of Winter Wheat Grown in the Northern Prairies                                   | Agricultural Research<br>Service |
| Gideon Marais | AES & EXT  | AES Plant Sciences |                               | \$         | 5,000.00   | Early Generation Selection for High Yield,<br>Winter-Hardiness, and Multiple Disease<br>Resistance in a HRWW Cross | ND Wheat Commission              |
| Gideon Marais | AES & EXT  | AES Plant Sciences |                               | \$         | 24,000.00  | Hard Winter Wheat Breeding Program for the Northern Plains   | ND Wheat Commission              |
| Joel Ransom   | AES & EXT  | AES Plant Sciences |                               | \$         | 14,500.00  | Response of Newly Released Varieties to High Input Management  | ND Wheat Commission              |
| Jiajia Rao    | AES & EXT  | AES Plant Sciences | Paul Schwarz<br>Shaobin Zhong | \$         | 29,097.00  | Using Chitosan Nanoparticles Targeting Fusarium and Mycotoxins during Malting                                      | Agricultural Research<br>Service |
| Senay Simsek  | AES & EXT  | AES Plant Sciences |                               | \$         | 183,712.00 | Deoxynivalenol (DON) Analysis in Wheat   | Agricultural Research<br>Service |
| Senay Simsek  | AES & EXT  | AES Plant Sciences |                               | \$         | 5,000.00   | Kill it Before Mill it: Steam Pasteurization for Inactivation of Microorganisms in HRS Wheat Kernels               | ND Wheat Commission              |
| Senay Simsek  | AES & EXT  | AES Plant Sciences |                               | \$         | 30,000.00  | HRW Quality Research Support   | ND Wheat Commission              |
| Senay Simsek  | AES & EXT  | AES Plant Sciences |                               | \$         | 40,000.00  | HRS Quality Research   | ND Wheat Commission              |
| Senay Simsek  | AES & EXT  | AES Plant Sciences |                               | \$         | 58,000.00  | HRS and Durum Crop Quality Survey  | ND Wheat Commission              |
| Senay Simsek  | AES & EXT  | AES Plant Sciences |                               | \$         | 58,000.00  | Specialty Wheat Quality-Technician   | ND Wheat Commission              |
| Senay Simsek  | AES & EXT  | AES Plant Sciences |                               | \$         | 58,000.00  | Technical and Information Services   | ND Wheat Commission              |
| Senay Simsek  | AES & EXT  | AES Plant Sciences |                               | \$         | 47,000.00  | Specialty Wheat Quality Research Support   | ND Wheat Commission              |

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|-----------------------|------------|--|--|------------|-----------|---|---|
| Senay Simsek          | AES & EXT  | AES Plant Sciences   |  | \$         | 40,000.00 | End Use Market Development Research for<br>Spring Wheat                                   | ND Wheat Commission   |
| Caley Gasch           | AES & EXT  | AES School of Natural<br>Resource Sciences                   | Thomas DeSutter<br>Jason Harmon<br>Abbey Wick                | \$         | 57,962.00 | Managing Salinity with Cover Crops: A Whole System Response (Year 3)                      | ND Soybean Council  |
| Marion Harris         | AES & EXT  | AES School of Natural<br>Resource Sciences                   | Andrew Green<br>Janet Knodel                                 | \$         | 6,914.00  | Plant Resistance to Wheat Stem Sawfly   | ND Wheat Commission   |
| Deirdre Voldseth      | AES & EXT  | AES School of Natural<br>Resource Sciences                   |  | \$         | 15,000.00 | North Dakota Pollinator Health and Pollination Services                                   | Agricultural Research<br>Service  |
| Audrey Kalil          | AES & EXT  | AES Williston<br>Research/Extension Center                   | Eric Eriksmoen<br>Cameron Wahlstrom                          | \$         | 7,080.00  | Deoxynivalenol (DON) Testing for Evaluation of<br>Durum Varieties in Western North Dakota | ND Wheat Commission   |
| Gregory Endres        | AES & EXT  | Extension Carrington<br>Research/Extension Center            |  | \$         | 678.00    | Barnes County Cover Crop Field Demo   | ND Soybean Council  |
| Jane Strommen         | AES & EXT  | Extension Child<br>Development and Family<br>Science         |  | \$         | 25,160.00 | Exploring Capacity to Reduce Fall Risk Among<br>Diverse Older Adults in Two Rural States  | Administration for<br>Community Living / South<br>Dakota State University |
| Lindsey Leker         | AES & EXT  | Extension Center for 4-H<br>Youth Dev                        |  | \$         | 25,000.00 | Growing a Computer Science Pathway in North Dakota  | National 4-H Council  |
| Lisa Pederson         | AES & EXT  | Extension Central<br>Grasslands<br>Research/Extension Center |  | \$         | 25,000.00 | North Dakota Beef Quality Assurance   | ND Beef Commission  |
| Julie Garden-Robinson | AES & EXT  | Extension Food & Nutrition                                   |  | \$         | 500.00    | Eat Smart, Play Hard  | ND Nutrition Council  |
| Janet Knodel          | AES & EXT  | Extension Plant Pathology                                    |  | \$         | 10,000.00 | Orange Wheat Blossom Midge Survey   | ND Wheat Commission   |
| Abbey Wick            | AES & EXT  | Extension School of Natural<br>Resource Sciences             | Marisol Berti<br>Francis Casey<br>Aaron Daigh<br>Caley Gasch | \$         | 31,628.00 | Define Wheat Responses to Salinity  | ND Wheat Commission   |
| Abbey Wick            | AES & EXT  | Extension School of Natural<br>Resource Sciences             | Marisol Berti<br>Francis Casey<br>Aaron Daigh<br>Caley Gasch | \$         | 48,843.00 | Soil Health and Agriculture Research Extension (SHARE) Farm in Larimore, ND               | ND Wheat Commission   |

| PI Name                | PI College | PI Department                         | Co-PI(s)                                  | Awarded Ar | nount      | Title   | Sponsor Name                                    |
|------------------------|------------|---------------------------------------|---|------------|------------|---|---|
| Jeremy Jackson         | CAFSNR     | Agribusiness and Applied Economics    |   | \$         | 5,000.00   | The Life and Contribution of Mancur Olson   | George Mason University                         |
| Jena Bjertness         | CAFSNR     | Northern Crops Institute              |   | \$         | 1,825.00   | Sponsor Trade Teams   | U.S. Soybean Export<br>Control                  |
| Yang Song              | CAHSS      | Architecture & Landscape Architecture | Matthew Kirkwood                          | \$         | 13,190.00  | GRPL-CESU "Partnership to Increase<br>Recreation and Access Opportunities"  | National Park Service                           |
| Yang Song              | CAHSS      | Architecture & Landscape Architecture |   | \$         | 51,655.00  | eFargo - Smart monitoring of Fargo Public<br>Schools - Phase I  | ND Department of Commerce                       |
| Robert Sailer          | CENG       | Mechanical Engineering                |   | \$         | 12,789.00  | Ruggedization of production equipment and alternative ingredient identification for Dakota Sweet Crude                | Doodlebug Beverages                             |
| Robert Sailer          | CENG       | Mechanical Engineering                |   | \$         | 166,238.00 | Design, development and transition of manufacturing of Innovative cooling devices using CO2 as coolant                | Frostime LLC                                    |
| Majura Selekwa         | CENG       | Mechanical Engineering                |   | \$         | 6,000.00   | Bison Robotics NASA Robotic Mining<br>Competition   | NASA / University of<br>North Dakota            |
| Yan Zhang              | CENG       | Mechanical Engineering                |   | \$         | 150,887.00 | Enhancement of Left Atrial Appendage Flow using Artificial Superhydrophobic Surface                                   | American Heart<br>Association                   |
| Claudia Tomany         | GRAD       | Graduate School                       |   | \$         | 138,000.00 | Graduate Research Fellowship Program  | National Science<br>Foundation                  |
| Charles Peterson       | СНР        | Deans Office, Health<br>Professions   |   | \$         | 76,947.00  | Innovis Health, LLC dba Essentia Health -<br>Clinical Teaching Program  | Essentia Health                                 |
| Charles Peterson       | СНР        | Deans Office, Health<br>Professions   |   | \$         | 68,378.00  | Sanford Physician Services  | Sanford Health                                  |
| Charles Peterson       | СНР        | Deans Office, Health<br>Professions   |   | \$         | 76,322.00  | Clinical Pharmacy Teaching Program  | Sanford Health                                  |
| Mykell Barnacle        | СНР        | Nursing                               |   | \$         | 393,753.00 | ANE - Nurse Practitioner Residency Program  | Health Resources and<br>Services Administration |
| Kelly Buettner-Schmidt | СНР        | Nursing                               | Brody Maack<br>Donald Miller<br>Megan Orr | \$         | 170,352.00 | Collaborative Tobacco Prevention and Control<br>Activities Study  | ND Department of Health                         |
| Yue Qian               | СНР        | Pharmaceutical Sciences               | -   | \$         | 100,000.00 | Discovery and Development of New Cancer<br>Therapeutic Drugs via Inhibiting D5D and<br>Targeting Over-expressed COX-2 | ND Department of<br>Commerce                    |

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|-----------------------|------------|--|------------------|---------|--------------|---|--|
| Sathish Venkatachalem | CHP        | Pharmaceutical Sciences                  |                  | \$      | 340,947.00   | Estrogen Receptor Signaling in Airway Inflammation  | National Institutes of<br>Health                     |
| Sathish Venkatachalem | СНР        | Pharmaceutical Sciences                  |                  | \$      | 25,000.00    | Dakota Cancer Collaborative on Translational Activity   | NIH / University of North<br>Dakota                  |
| Sathish Venkatachalem | СНР        | Pharmaceutical Sciences                  |                  | \$      | 300,000.00   | Dakota Cancer Collaborative on Translational<br>Activity  | NIH / University of North<br>Dakota                  |
| Paul Carson           | СНР        | Public Health                            | Kylie Hall       | \$      | 126,003.00   | ND Immunization Disparities Project   | CDC / ND Department of Health                        |
| Kyle Hackney          | CHDE       | Health, Nutrition & Exercise<br>Sciences | Thomas Lillquist | \$      | 2,090.00     | The Effects of Remote Post -Exercise Ischemic Conditioning on Recovery from Strenuous Exercise                              | National Strength & Conditioning Assoc               |
| Debra Habedank        | Misc       | Center for Child<br>Development          |                  | \$      | 534.71       | USDA Child and Adult Care Food Program  | USDA-FNS / ND<br>Department of Public<br>Instruction |
| Kelly Rusch           | Misc       | North Dakota EPSCoR                      |                  | \$      | 2,242,875.00 | ND EPSCoR State Office Funding  | ND University System<br>Office                       |
| Kelly Rusch           | Misc       | North Dakota EPSCoR                      |                  | \$      | 600,000.00   | ND EPSCoR State Office Funding  | ND University System<br>Office                       |
| Thomas Claeys         | Misc       | North Dakota Forest<br>Service           |                  | \$      | 50,000.00    | THRO Fuels Management   | National Park Service                                |
| Theresa Wickenheiser  | Misc       | Student Health Services                  | Emily Hegg       | \$      | 9,091.00     | NDQuits Cessation Expanded Grant FY 19-20   | ND Department of Health                              |
| James Bahr            | Misc       | VP for Research                          |                  | \$      | 65,734.00    | Field Testing and Optimization of Soy Based Dust Control Agents   | ND Department of<br>Transportation                   |
| Sara Mwagura          | Misc       | Wellness Center                          |                  | \$      | 570.68       | NDSU Wellness Center Child Care ND Food<br>Program  | USDA-FNS / ND Department of Public Instruction       |
| Julia Bowsher         | CSM        | Biological Sciences                      |                  | \$      | 63,571.00    | Hymenopteran Stress Physiology  | Agricultural Research<br>Service                     |
| Jill Hamilton         | CSM        | Biological Sciences                      |                  | \$      | 7,000.00     | Incorporating a Climate-based Adaptation Approach for Post-fire Reforestation - Cold Tolerance                              | Forest Service                                       |
| Jill Hamilton         | CSM        | Biological Sciences                      |                  | \$      | 283,985.00   | Research-PGR: Genomic Architecture of<br>Porous Species Boundaries: Implications of<br>Climate Adaption and Hybrid Breeding | NSF / Virginia Tech                                  |
| Craig Stockwell       | CSM        | Biological Sciences                      |                  | \$      | 48,000.00    | Influences of Changing Land-Cover on<br>Amphibian Habitat Suitability   | U.S. Geological Survey                               |

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|-----------------|------------|--|------------------------------------|-----------|------------|--|--|
| Mark McCourt    | CSM        | Psychology                                     | Jeffrey Johnson<br>Kathryn Wissman | \$        | 100,000.00 | Testing the potential of TimeCloud technology for improved memory and cognition in academic settings | ND Department of<br>Commerce                                     |
| Timothy Horner  | UGPTI      | Upper Great Plains<br>Transportation Institute | Alan Dybing                        | \$        | 195,144.00 | NDDOT State Needs Study - 2019 to 2020   | Federal Highway Administration / ND Department of Transportation |
| Kimberly Vachal | UGPTI      | Upper Great Plains<br>Transportation Institute |                                    | \$        | 35,000.00  | ND Wheat Commission Transportation<br>Research   | ND Wheat Commission  |