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North Dakota Science and Engineering Fair
Committee Members

2015 Chair:
Hesham El-Rewini, Dean, College of Engineering and Mines

Committee Coordinator:
Matt Cavalli, College of Engineering and Mines, Chair, Mechanical Engineering

Publicity and Promotions:
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Dawn Botsford, Ceremonies and Special Events
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Judging:
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Logistics & Communication:
Gwen Klawon, College of Engineering and Mines
Karen Cisek, School of Medicine and Health Sciences, ND INBRE
Special Thanks to Our Sponsors

Major Sponsors
Vice President for Research and Economic Development .................. $2,500
School of Medicine and Health Sciences ............................... $2,500
College of Engineering and Mines ........................................ $2,500
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College of Arts & Sciences .................................................. $1,500
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Vice President of Student Affairs / Admissions ......................... $1,000
Idea Network of Biomedical Research Excellence (INBRE) ........ $1,000

UNIVERSITY OF NORTH DAKOTA

RESEARCH & ECONOMIC DEVELOPMENT
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COLLEGE OF ENGINEERING & MINES
UNIVERSITY OF NORTH DAKOTA

COLLEGE OF ARTS & SCIENCES
UNIVERSITY OF NORTH DAKOTA

GREATER GRAND FORKS CONVENTION & VISITORS BUREAU

65th Annual North Dakota Science & Engineering Fair
The North Dakota State Science & Engineering Fair is operated by the NDSSEF Board. All inquiries regarding the Fair, its judging, and its rules should be directed to the NDSSEF Board.

Acknowledgements

The North Dakota State Science & Engineering Fair would like to thank all Sponsors, UND Faculty and Staff, Graduate Students, and Student Ambassadors for their tremendous support in making this year’s Science & Engineering Fair a success.

Your enthusiastic involvement is greatly appreciated.
65th North Dakota State Science and Engineering Fair
University of North Dakota

Thursday, March 26, 2015

8:00-11:00am  Registration and Setup
UND Wellness Center

11:00-12:45pm  Lunch on your own

1:00-3:30pm  Hands-on activities
(Nursing & Medicine, Space Studies & Aerospace, Engineering, Math, & Physics,
Geography and Forensic Science, Biology & Chemistry, Admissions & Campus Tour)

3:45pm  Pick up students from Wellness Center

5:00-6:30pm  Banquet at Alerus Center

Friday, March 27, 2015

8:00am  Judges Report/Breakfast
UND Wellness Center

8:30am  Judges’ Meeting
UND Wellness Center

9:00am  Judging Begins

9:00am  Teachers’ Meeting
UND Wellness Center

Noon-1:00pm  Students’ Lunch
UND Wellness Center

Judges’ Lunch
UND Wellness Center

12:45pm  Judges’ Meeting (all afternoon judges)
UND Wellness Center

1:00pm  Judging Resumes

2:00-4:30pm  Open to the public

4:30pm  Takedown and setup for Awards Ceremony
UND Wellness Center

5:30pm  Awards Ceremony
UND Wellness Center
Northwest Instructors

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North Dakota Science & Engineering Fair

Regions

1. NORTHWEST
2. NORTH CENTRAL
3. NORTHEAST
4. SOUTHWEST CENTRAL
5. SOUTH CENTRAL
6. SOUTHEAST CENTRAL
Northwest (1) Junior Division

Directors: Annette Kreft, Wendy Telehey, & Deb Moe

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Project Title</th>
<th>School</th>
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<tbody>
<tr>
<td>101</td>
<td>Joel Anderson</td>
<td>The Clarity of Ice</td>
<td>Tioga</td>
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<tr>
<td>102</td>
<td>Anna Dragseth</td>
<td>Making a Greener Cleaner</td>
<td>East Fairview</td>
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<td>103</td>
<td>Greta Eder</td>
<td>Can Cereal Grains Produce Other Products?</td>
<td>Trinity Christian</td>
</tr>
<tr>
<td>104</td>
<td>Kellie Hetler</td>
<td>Stand Bac-Teria!</td>
<td>Trinity Christian</td>
</tr>
<tr>
<td>105</td>
<td>Joel Kletke</td>
<td>Toxic Environment</td>
<td>Trinity Christian</td>
</tr>
<tr>
<td>106</td>
<td>Abigail Larson</td>
<td>What Color Is Your Blood Pressure?</td>
<td>Tioga</td>
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<tr>
<td>107</td>
<td>Connor Martin</td>
<td>Carnivorous Plant vs. Cricket</td>
<td>East Fairview</td>
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<td>108</td>
<td>Thaddeus Moore</td>
<td>Laws of Light</td>
<td>Trenton</td>
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<tr>
<td>109</td>
<td>Nicole Postovit</td>
<td>Hands That Kill</td>
<td>Trinity Christian</td>
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<td>110</td>
<td>Jaycie Rau</td>
<td>Oil Accidents</td>
<td>Tioga</td>
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<tr>
<td>111</td>
<td>Zoey Reyna</td>
<td>The Effects of Acids &amp; Alkalis On Bacteria</td>
<td>Trenton</td>
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<tr>
<td>112</td>
<td>Chloe Schell</td>
<td>Plants vs. Food</td>
<td>Trinity Christian</td>
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<td>113</td>
<td>Leah Schmidt</td>
<td>Speedy Antacid</td>
<td>Tioga</td>
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<td>114</td>
<td>Trinity Stearns</td>
<td>Watery Bacteria</td>
<td>Trenton</td>
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<td>115</td>
<td>Herbert Turner</td>
<td>Ashes to Ashes</td>
<td>Trenton</td>
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<tr>
<td>116</td>
<td>Hailey Whiteowl</td>
<td>Find The C In Orange</td>
<td>New Town</td>
</tr>
</tbody>
</table>

Alternates

1   Miranda Penner   Tomato Plant Density And Growth       Trinity Christian
2   Reese Nielson   The Triple B                              Trenton
3   Larissa Bauste  So You Think You Know Clean?           Trenton
4   Madison Schell  Can Bean Plants Grow Sideways?            Trinity Christian
## North Central (2) Junior Division

**Directors:** Vicki Olson

<table>
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<tr>
<th>No.</th>
<th>Name</th>
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<tbody>
<tr>
<td>117</td>
<td>Ethan Schepp</td>
<td>M&amp;M: The Survival Challenge.</td>
<td>Velva</td>
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<td>118</td>
<td>Jesica Jespersen</td>
<td>Can Adults Pass a Middle School Science Test.</td>
<td>Velva</td>
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<td>119</td>
<td>Ashley Vollmer</td>
<td>Investigating the Mpemba Effect.</td>
<td>Velva</td>
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<tr>
<td>120</td>
<td>Evan Follman</td>
<td>Robots and Ultrasonic Sensors.</td>
<td>Leeds</td>
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<td>121</td>
<td>Noah Christman</td>
<td>Pop Can Heater.</td>
<td>Berthold</td>
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<td>122</td>
<td>Kordell Loewen</td>
<td>Mentos and Cola.</td>
<td>Velva</td>
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<tr>
<td>123</td>
<td>Rachel Mack</td>
<td>Oil Spills.</td>
<td>Velva</td>
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<td>124</td>
<td>Emma Howe</td>
<td>Did You Hear That.</td>
<td>Velva</td>
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<td>125</td>
<td>Sam Pfennig</td>
<td>Germs - All Juiced Up.</td>
<td>Velva</td>
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<td>126</td>
<td>Nathan Elverud</td>
<td>Golf Balls.</td>
<td>Leeds</td>
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<td>127</td>
<td>Keaton Nelsen</td>
<td>How To Make Grass Not Grow So Fast.</td>
<td>Leeds</td>
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</tbody>
</table>

### Alternates

1. Arnikka Thompson  | To Prevent Algae Growth  | Leeds   |
2. Destiny Herr      | Fingerprints             | Velva   |
3. Kylie Hildre      | Cold or Hot              | Velva   |
4. Elijah Hackman     | Static or No Static      | Velva   |
### Northeast (3) Junior Division

**Director:** Lorraine O’Shea

<table>
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<tr>
<th>No.</th>
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<tr>
<td>133</td>
<td>Cassidy Mindeman</td>
<td>Cleaning Up.</td>
<td>Schroeder, GF</td>
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<td>134</td>
<td>Micah Setness</td>
<td>Corrosive Clash.</td>
<td>Park River</td>
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<td>135</td>
<td>Philip Steffan</td>
<td>Are Screw Pumps Better?</td>
<td>Lakota</td>
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<td>136</td>
<td>Aaron Johns</td>
<td>Robotic Oil Skimmer (ROS).</td>
<td>Dakota Prairie</td>
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<td>137</td>
<td>Alyssa Kemp</td>
<td>An Evaluation of Erosion Control - Reducing Sediment in our Streams</td>
<td>Valley/Edinburg</td>
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<td>138</td>
<td>Abbey Linstad</td>
<td>The Greener the Cleaner</td>
<td>Lakota</td>
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<td>139</td>
<td>Bennett Carter</td>
<td>Sweet Confusion.</td>
<td>Park River</td>
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<td>140</td>
<td>Cole Matejcek</td>
<td>Dirty Places.</td>
<td>Lakota</td>
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<td>141</td>
<td>Jayron Salefar</td>
<td>Pencil Resistors.</td>
<td>Schroeder</td>
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<td>142</td>
<td>Wesley Kemp</td>
<td>Calculating the Crash-Comparison of Collision &amp; Impulse for Different Materials</td>
<td>Valley/Edinburg</td>
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<td>143</td>
<td>James Fisk</td>
<td>A Battery That Makes Cents</td>
<td>Lakota</td>
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<td>144</td>
<td>Damien Randall</td>
<td>Mods on Lift.</td>
<td>Schroeder</td>
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<td>145</td>
<td>Graycn Cole</td>
<td>Bacteria Doesn’t Lie - Paper or Air Dry</td>
<td>Park River</td>
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<td>146</td>
<td>Maia Jackson</td>
<td>Bad to the Bone.</td>
<td>Schroeder</td>
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<td>147</td>
<td>Lane Bell</td>
<td>What’s That Smell?</td>
<td>Park River</td>
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<td>148</td>
<td>Francie Shaft</td>
<td>Molten Mitten.</td>
<td>Schroeder</td>
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</tbody>
</table>

**Alternate**

1. Lauren Craig  
   Food for the Range  
   Schroeder

2. Jake Sturges  
   The Filtered Truth  
   Schroeder
**Directors:** Julie Hein, Julie Fleck & CaraLee Heiser

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Project Title</th>
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<tbody>
<tr>
<td>149</td>
<td>Caitlyn Becker</td>
<td>GPA vs Birth Order</td>
<td>Flasher</td>
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<td>150</td>
<td>Kaitlyn Reimer</td>
<td>Exercising Einstein</td>
<td>Scranton</td>
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<td>151</td>
<td>Nathaniel Geestman</td>
<td>Popularity Contest</td>
<td>Linton</td>
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<td>152</td>
<td>Juli Spilman</td>
<td>Effects of Freezing on Cells</td>
<td>Mandan</td>
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<td>153</td>
<td>Mary Hintz</td>
<td>The Liquid Effect</td>
<td>Flasher</td>
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<td>154</td>
<td>Brady Tougas</td>
<td>Coyote Calling</td>
<td>Strasburg</td>
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<td>155</td>
<td>Sam Dart</td>
<td>Supercoolong &amp; the Mpemba Effect</td>
<td>Grant County</td>
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<td>156</td>
<td>Raanne Schiermeister</td>
<td>Biodegradable Earth</td>
<td>Linton</td>
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<td>157</td>
<td>Abbigale Steeke</td>
<td>Go Away Bacteria</td>
<td>Scranton</td>
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<td>158</td>
<td>Brooke Froelich</td>
<td>The Best Muffin</td>
<td>Flasher</td>
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<tr>
<td>159</td>
<td>Mattie Milford</td>
<td>Which Rocks Work Best for Roads</td>
<td>Bismarck Homeschool</td>
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<td>160</td>
<td>Adam Hulm</td>
<td>Which Soil Retains the Most Water</td>
<td>Strasburg</td>
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<td>161</td>
<td>Kurt Muggli</td>
<td>Nails From Your Cereal</td>
<td>Grant County</td>
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<tr>
<td>162</td>
<td>Mya Vetter</td>
<td>Safety Barriers</td>
<td>Linton</td>
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<tr>
<td>163</td>
<td>Taylor Hestekin</td>
<td>Bird Attraction</td>
<td>Scranton</td>
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<tr>
<td>164</td>
<td>Colton Woodbury</td>
<td>Shots Gone Wild</td>
<td>Flasher</td>
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**Alternates**

1. Whitney Leingang   Electrolyte Test   Flasher
2. Morgan Krizan      White Noise        Hebron
3. Sarah Schafer      Training Trials    Flasher
4. Austyn Rafteseth   Grass, Nature’s Filter Grant County
**Southeast Central (5) Junior Division**

**Director:** Peter Sykora

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Project Title</th>
<th>School</th>
</tr>
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<tbody>
<tr>
<td>165</td>
<td>David Jochim</td>
<td>Does Height Affect Distance of a Golf Ball When You Tee Off</td>
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<td>166</td>
<td>Tyra Steinwand</td>
<td>Mystery Dust</td>
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<td>167</td>
<td>Austin Schmidt</td>
<td>Docility Test</td>
<td>Kidder Co. Tappen</td>
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<td>Olivia Byerley</td>
<td>Busting Bristle Bacteria</td>
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<td>Clark Thielges</td>
<td>Launch This</td>
<td>Wishek</td>
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<td>170</td>
<td>Casey Durheim</td>
<td>Wipes in the Pipes</td>
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<td>171</td>
<td>Tanner Kempf</td>
<td>Fishing Line Strength</td>
<td>Ashley</td>
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<td>Desa Sand</td>
<td>Stop That Leak</td>
<td>Ellendale</td>
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<td>173</td>
<td>Chase Bader</td>
<td>Shaping Your Thoughts</td>
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<td>174</td>
<td>Mary Labuhn</td>
<td>Coffee Break</td>
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<td>175</td>
<td>Cassidy Walth</td>
<td>How Does Tone Affect Memory</td>
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<td>176</td>
<td>Yuliet Monatukwa</td>
<td>Bacteria Among Us</td>
<td>Ellendale</td>
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<td>177</td>
<td>Isabella Froehling</td>
<td>Physiological Effects of Meditation: Blood Pressure</td>
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<td>Jalyn Fischer</td>
<td>Rot or Not?</td>
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<td>179</td>
<td>Madeline Schauer</td>
<td>Water Effects on Seed Germination.</td>
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<td>180</td>
<td>Alexius Thorpe</td>
<td>Clean... Sugar... What?</td>
<td>Ellendale</td>
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</table>

**Alternates**

1. Aislinn Flaherty | Sweet Tooth | Ellendale
2. Sarah Labuhn   | Book Worms  | Ellendale
3. Kolbey Pahl    | Stains Gone Wild | Ellendale
4. Addie Schnabel | What's the Scoop on Poop? | Ashley
## Southeast (6) Junior Division

**Director:** Andrew Friskop

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<tbody>
<tr>
<td>181</td>
<td>Hayden German</td>
<td>An Analysis of Household Insecticide Solutions</td>
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<td>182</td>
<td>Cati Silva</td>
<td>The Effects of Flower Power</td>
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<td>183</td>
<td>Jeremy Liljenquist</td>
<td>Bringing Saline and Sodic Soils to Life</td>
<td>Griggs County Central</td>
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<td>184</td>
<td>Gurtaran Johal</td>
<td>What’s Best to Drink.</td>
<td>Oak Grove Middle School</td>
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<td>185</td>
<td>Cody Mauch</td>
<td>The Effects of Natural Products on Glycine max Production</td>
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<td>186</td>
<td>Branden Skjoiten</td>
<td>A Chemical and Biological Analysis of Lake Water Decontamination</td>
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<td>187</td>
<td>Hayden Boll</td>
<td>A Comparative Analysis of Various Toothpastes</td>
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<td>188</td>
<td>Braden Prochnow</td>
<td>The Antimicrobial Effects of Wound Care Treatments</td>
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<td>189</td>
<td>Jaxon Mauch</td>
<td>A Microbial Analysis of the School Environment</td>
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<td>190</td>
<td>Phillipe Garcia</td>
<td>The Effect of Lawn Chemicals on Grass Growth and Worm Migration</td>
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<td>191</td>
<td>Abbey Simonson</td>
<td>Effects of Chemicals on Daphnia</td>
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<td>192</td>
<td>Gracie Mosher</td>
<td>A Comparative Analysis of Disinfectants</td>
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<td>193</td>
<td>Ben Krump</td>
<td>Effect of Natural Fertilizers on the Native Prairie</td>
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<td>Davis Sunderland</td>
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<td>Lakin Mauch</td>
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<td>196</td>
<td>Madeline Nelsen</td>
<td>UV Rays and Bacteria</td>
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**Northwest (1) Senior Division**

**Directors:** Annette Kreft, Wendy Telehey & Deb Moe

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<td>Symbria Bell</td>
<td>Is Lake Sakakawea As Healthy As It Should Be?</td>
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<td>202</td>
<td>Maycie Brunelle</td>
<td>The Ultraviolet Light Effect on Microorganisms</td>
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<td>203</td>
<td>Benjamin Crawford</td>
<td>Unwanted Oil: Part II</td>
<td>Trinity Christian</td>
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<td>204</td>
<td>Zach Danks</td>
<td>Soda Acid Decay</td>
<td>New Town</td>
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<td>205</td>
<td>Max Freed</td>
<td>Ballistic About Aerogel</td>
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<td>206</td>
<td>Darbie Fisketjon</td>
<td>H₂OH No!</td>
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<td>207</td>
<td>Kelsey Guttormson</td>
<td>Hello My Name Is ... Happy!</td>
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<td>208</td>
<td>Kathryn Handeland</td>
<td>Fast vs. Market</td>
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<td>Madyesen Houle</td>
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<td>Ryan Joyce</td>
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<td>Oink Oink</td>
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<td>Bernice Macasaet</td>
<td>The Effects of Clorox Disinfecting Wipes In A High School Environment</td>
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<td>Colton Moe</td>
<td>Does It Burn?</td>
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<td>Makayla Ness</td>
<td>An Investigation Of The Antimicrobial Attributes Of Native North Dakota Plants</td>
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<td>Taylor Ohlhauser</td>
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<td>216</td>
<td>Zoe’ Unterseher</td>
<td>Butter Meltdown</td>
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**Alternates**

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<td>1</td>
<td>Madison Green</td>
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<td>2</td>
<td>Celina Nielsen</td>
<td>Laughter: The Best Medicine?</td>
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<td>3</td>
<td>Gracia Eder</td>
<td>Winter Of The Living Dead Insects</td>
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<td>4</td>
<td>Kimberlie Gardea</td>
<td>Bacteria Killer</td>
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### Directors: Vicki Olson

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<tr>
<td>217</td>
<td>Micayla Erdahl</td>
<td>What “Eye” See</td>
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<td>218</td>
<td>Cora Pfenning</td>
<td>Multi-tasking - Efficient or Bust</td>
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<td>Bryce Florence</td>
<td>Forensics: Can You Predict the Spatter?</td>
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<td>Madison Bodine</td>
<td>Color Destroyer</td>
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<td>221</td>
<td>Adam Fisher</td>
<td>Boat Hulls</td>
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<td>Levi Massine</td>
<td>Best Materials for Sound Barriers</td>
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<td>Katelyn Nelsen</td>
<td>Are Green Detergents Safer for the Environment.</td>
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<td>Paul Eapen</td>
<td>A Novel Simple Identification Method for Urinary Stones</td>
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<td>Wyatt Limke</td>
<td>The Effects of Theobromine, Theophylline,</td>
<td>Berthold</td>
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<td>Paraxanthine, and Glucose on the Adenosine</td>
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<td>226</td>
<td>Richelle Darling</td>
<td>What’s In My Yogurt</td>
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<td>227</td>
<td>Preston Miller</td>
<td>Vortexing Magnetic Fields</td>
<td>Sawyer</td>
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### Alternates

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<td>Courtney Bubach</td>
<td>How Music Affects the Human Body</td>
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<td>3</td>
<td>Casey Thomas</td>
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<td>4</td>
<td>Shad Vedaa</td>
<td>Solar Powered Phone Charger</td>
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# Northeast (3) Senior Division

**Director:** Lorraine O’Shea

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<td>233</td>
<td>Shelby Cyr</td>
<td>The Effects of Soluble vs. Fibrillar. A beta Peptide on Polyamine Synthesis in Neural Tissue - Relevance to Alzheimer’s Disease</td>
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<td>234</td>
<td>Mariah Kinnebergy</td>
<td>Fractals in Nature</td>
<td>Dakota Praire</td>
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<td>235</td>
<td>Courtney Estad</td>
<td>Harmful Herbicides - Effects of Common Agricultural Herbicides on Human Cells</td>
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<td>236</td>
<td>Morgan Ellingson</td>
<td>The Relative Effects of Curcuminoids on HPV (positive and negative) Cervical Cancer Cells</td>
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<td>237</td>
<td>Selena Hobbs</td>
<td>Finding Fingerprints - A Comparison of Processes and Surfaces for Obtaining Fingerprints</td>
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<td>238</td>
<td>Haley Ashpole</td>
<td>Worming Around - A Study of How Food Affects Redworms</td>
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<td>Courtney Duff</td>
<td>Factors that Influence Attitudes Toward Gay Males and Lesbian Females</td>
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<td>Margee Corbet</td>
<td>Rewards vs. Punishments</td>
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<td>Mikayla Fingarson</td>
<td>The Effects of Soil Compaction on the Growth of Sativus raphanus</td>
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<td>Eli Pastorek</td>
<td>A Comparison of Cleaning Methods for Reducing Bacteria on Wooden Cutting Boards</td>
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<td>Jayce Moor</td>
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<td>Kristian Myrdal</td>
<td>Does Water Temperature Change the Detrimental Effects of Glyphosphate?</td>
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<td>245</td>
<td>Devarshi Patel</td>
<td>Molecular Biology of Selenoenzymes in Prevention of Mercury Toxicity</td>
<td>Red River</td>
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<td>Emily Swanson</td>
<td>Beating Up Bad Bacteria, The Effects of Cleaning Method on Bacteria in Water Bottles</td>
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<td>Danielle Durand</td>
<td>Correlation Between Eye Color and Sensitivity to Bright Light</td>
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<td>248</td>
<td>Rachel Jonasson</td>
<td>Tooth Terrorist - Effects of Various Beverages on Tooth Enamel</td>
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## Southwest Central (4) Senior Division

**Directors:** Julie Hein, Julie Fleck & CaraLee Heiser

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<td>Shantel Lang</td>
<td>Homemade or Boughten?</td>
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<td>Cassidy Tormaschy</td>
<td>Effects of Sugar Substrate on the Fermentation Rate of Yeast</td>
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<td>Adam Schaefbauer</td>
<td>How Wood Can Expand &amp; Shrink 2</td>
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<td>252</td>
<td>Kaitlyn Binstock</td>
<td>Clean or Not?</td>
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<td>253</td>
<td>Kate Fox</td>
<td>What's in a Name?</td>
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<td>254</td>
<td>Dale Spilman</td>
<td>Fungus Amongus</td>
<td>Mandan</td>
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<td>Andrew Hulm</td>
<td>Helianthus Annuus Incendium</td>
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<td>Seth Obritsch</td>
<td>Supplementing Cattle: Is It Really Worth It?</td>
<td>Belfield</td>
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<td>Jacob Eberle</td>
<td>Something’s Fishy.</td>
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<td>Christopher Dean</td>
<td>Analysis of Magnetic Fields on Ferro-fluid and its Relation to Nanotechnology</td>
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<td>259</td>
<td>Savanah Canen</td>
<td>How Sleep Deprivation Affects Your Reactions</td>
<td>Hebron</td>
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<td>Ashley Tougas</td>
<td>Changes in CO2 Output During Exercise</td>
<td>Strasburg</td>
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<td>Tani White</td>
<td>The Halo Effect in High School</td>
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<td>Hudson Pierce</td>
<td>Rotten Retainers</td>
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<td>Katie Baumgartner</td>
<td>Solar vs Distilled</td>
<td>Strasburg</td>
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<td>264</td>
<td>Eileen Spilman</td>
<td>Equation of State Solver</td>
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**Alternates**

1. Carter Kershaw  - Hot Shot
2. Joshua Brevik    - Bakken Light Pollution
4. Artie Voller     - Building Bridges

UPDATED: 3/24/14
**Southeast Central (5) Senior Division**

**Director:** Peter Sykora

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<td>Sean Locken</td>
<td>Solar Engine Applications II</td>
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<td>Morgan Schnabel</td>
<td>Do Magnets Affect the Rate of Flow of Water</td>
<td>Wishek</td>
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<td>267</td>
<td>Zachary Fischer</td>
<td>What are Your Cattle Drinking?</td>
<td>Ashley</td>
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<td>268</td>
<td>Tyler Toepke-Floyd</td>
<td>Emission Reduction Using an Activated Carbon Supplement</td>
<td>Wishek</td>
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<td>Kayla Rohr</td>
<td>Column Chromatography</td>
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<td>270</td>
<td>Logan Mittleider</td>
<td>Nasty Stuff on Things You Touch Daily...</td>
<td>Kidder Co. Tappan</td>
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<td>Cole Ketterling</td>
<td>Which Truss is the Strongest</td>
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<td>Trelyn Kienzle</td>
<td>Eradication of Bacteria</td>
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<td>Jacob Hauck</td>
<td>Spatial Soybeans</td>
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<td>Aaron Bechtle</td>
<td>Nail Power</td>
<td>Wishek</td>
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<td>Julianna Wolff</td>
<td>Dangerous Decibels</td>
<td>Wishek</td>
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<td>Rigo Martinez Jr.</td>
<td>The Speed of Propeller Blades</td>
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<td>Lora Horner</td>
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<td>Rebekka Wanner</td>
<td>Hydrophonics Continued</td>
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<td>Kadey Holm</td>
<td>Lethal Lysol</td>
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<td>Hunter Pinke</td>
<td>Impact Damage of Hail on Shingles.</td>
<td>Wishek</td>
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**Alternates**

1. Aubrie Demaray  
   Can Horses See Color?  
   Kidder Co. Tappan

2. Matt Rueb  
   Energy Drinks  
   Ashley
## Southeast (6) Senior Division

**Director:** Andrew Friskop

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<td>Mackenzie Koenig</td>
<td><strong>Face it.</strong></td>
<td>Hope-Page</td>
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<td>282</td>
<td>Grady Mauch</td>
<td><strong>The Fungicidal Impact of Detrimental Weeds on Soybeans</strong></td>
<td>Hankinson</td>
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<td>283</td>
<td>Ethan Johnson</td>
<td><strong>Stereotype Foundations.</strong></td>
<td>Hope-Page</td>
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At the North Dakota State Science & Engineering Fair, four junior division students from each of the six regions are selected to receive special recognition. Two are selected as second-place winners, and two are selected as first-place winners. In addition, one presenter is selected as the junior division runner-up sweepstakes award winner and one as the junior division sweepstakes award winner. Awards are as follows:

- **Second-place winners**: each second place winner receives a silver plaque.
- **First-place winners**: each first place winner receives a gold plaque.
- **Runner-up sweepstakes winner**: the runner-up sweepstakes winner is judged as presenting the second-best junior division project from all regions and from any discipline category, and receives a silver North Dakota plaque and a monetary award of $50 from the UND Graduate School.
- **Sweepstakes winner**: the sweepstakes winner is judged as presenting the best junior division project from all regions and from any discipline category. The sweepstakes winner receives a gold North Dakota plaque, and a certificate of merit and a monetary award of $100 from the UND Graduate School.

From among the students presenting projects in the senior division at the North Dakota State Science & Engineering fair, four students from each of the six regions are selected to receive special recognition. Two are selected as second-place winners and two are selected as first-place winners. In addition, one student is selected as presenting an outstanding project from among all regions and category disciplines, and receives the senior division runner-up sweepstakes award. The student who presents the best project from among all regions and category disciplines in the senior division is named the senior division sweepstakes winner. Awards are as follows:

- **Second-place winners**: the 12 second-place winners receive a silver plaque, and they are named as alternates to attend the International Science and Engineering Fair (ISEF) in Los Angeles, CA, in May 2014.
- **First-place winners**: the 12 first-place winners receive a gold plaque and a hooded sweatshirt. They also compete as North Dakota representatives at the ISEF in Los Angeles, CA.
- **Sweepstakes Second Runner-Up**: the Sweepstakes Second Runner-Up is judged as presenting the third-best senior division project from all regions and from any discipline category. In addition to competing at ISEF, the winner receives a North Dakota plaque plus a monetary award of $200, and a one-year, $1,000 scholarship from the UND Graduate School.
- **Sweepstakes Runner-Up**: the Sweepstakes Runner-Up is judged as presenting the second best-senior division project from all regions and from any discipline category. In addition to competing at ISEF, the winner receives a silver North Dakota plaque and a one-year, $2,000 scholarship to the University of North Dakota, plus a monetary award of $250 from the UND Division of Student Affairs / UND Office of Research and Economic Development.
- **Sweepstakes Winner**: the Sweepstakes Winner is judged as presenting the best senior division project from all regions and from any discipline category. In addition to competing at ISEF, the winner receives a gold North Dakota plaque, a one-year, $2,500 scholarship to UND, plus a monetary award of $500 from the UND Division of Student Affairs / UND Office of Research and Economic Development.
- **Traux-Traer Traveling Trophy**: the sweepstakes winner’s school receives the Traux-Traer Traveling Trophy.
The University of North Dakota – Affiliated Sponsors and Awards

Office of Research and Economic Development: Phyllis E. Johnson, Vice President (a)
Division of Student Affairs: Lori Reesor, Vice President (b)
Graduate School: Wayne Swisher, Interim Dean (c)

$500 monetary award (a), a one-year, $2,500 scholarship (b) and gold plaque for best overall project, Senior division
$250 monetary award (a), a one-year, $2,000 scholarship (b) and silver plaque for best overall project, runner up, Senior division
$200 monetary award (c), a one-year, $1,000 scholarship and a plaque for best overall project, second runner up, Senior division
$100 monetary award (c) and certificate for best overall project, Junior division
$50 monetary award (c) and certificate for best overall project runner-up, Junior division

Office of Research and Economic Development: Phyllis E. Johnson, Vice President
$500 monetary award and a certificate for project exhibiting exceptional creativity, Junior or Senior division

John D. Odegard School of Aerospace Sciences: Bruce A. Smith, Dean
$150 monetary award and a certificate for project related to computer science, Senior division
$100 monetary award and a certificate for project related to computer science, Junior division
$150 monetary award and a certificate for project related to geology/geography and atmospheric sciences, Senior division
$100 monetary award and a certificate for project related to geology/geography and atmospheric sciences, Junior division

Department of Atmospheric Sciences: Michael Poellot, Chair
$75 monetary award and certificate for project in the field of atmospheric sciences, Junior or Senior division

Department of Computer Science: Ronald Marsh, Chair
$50 monetary award and a certificate for project in the computer science category, Senior division
$50 monetary award and a certificate for project in the computer science category, Junior division

College of Arts and Sciences: Kathleen A. Tiemann, Interim Dean
$100 monetary award and a certificate for outstanding math or science project by a female exhibitor, Senior division
$50 monetary award and a certificate for outstanding math or science project by a female exhibitor, Junior division
$100 monetary award and a certificate for project in the fields of social or behavioral science, Senior division
$50 monetary award and a certificate for project in the fields of social or behavioral science, Junior division

Department of Biology: Isaac Schlosser, Chair
$100 monetary award, $300 scholarship and certificate for project in the biology category, Senior division
$50 monetary award and certificate for project in the biology category, Junior division

Department of Chemistry: David Pierce, Chair
$100 monetary award, $300 scholarship and certificate for project in the chemistry category, Senior division
$50 monetary award and certificate for project in the chemistry category, Junior division

Department of Geography: Bradley Rundquist, Chair
$50 monetary award, $250 scholarship, and a certificate for project in the geography category, Senior division
$50 monetary award and a certificate for project in the geography category, Junior division

Department of Mathematics: Joel Iiams, Chair
$100 monetary award, $500 scholarship, and a certificate for project in the mathematics category, Senior division
$50 monetary award and certificate for project in the mathematics category, Junior division

Department of Physics and Astrophysics: Ju Kim, Chair
$100 monetary award, $500 scholarship, and a certificate for best project in physics category, Senior division
$100 monetary award and a certificate for best project in physics category, Junior division

Department of Psychology: Jeffrey Weatherly, Chair
$100 monetary award and a certificate for project in the psychology or behavioral science category, Senior division
$100 monetary award and a certificate for project in the psychology or behavioral science category, Junior division
The University of North Dakota – Affiliated Sponsors and Awards

College of Engineering and Mines: Hesham El-Rewini, Dean
$200 monetary award and certificate for project in engineering, Senior division
$100 monetary award and certificate for project in engineering, Junior division
$100 monetary award and certificate for project in energy or environmental science categories, Senior division
$50 monetary award and certificate for project in energy or environmental science categories, Junior division

Department of Chemical Engineering, Michael Mann, Chair
$50 monetary award and certificate for project in the chemical engineering category, Senior division
$50 monetary award and certificate for project in the chemical engineering category, Junior division

Department of Civil Engineering, Harvey Gullicks, Chair
$25 monetary award and certificate for project in the civil engineering category, Senior division
$25 monetary award and certificate for project in the civil engineering category, Junior division

Department of Electrical Engineering, Forrest Ames, Interim Chair
$50 monetary award and certificate for project in the electrical engineering category, Senior division
$50 monetary award and certificate for project in the electrical engineering category, Junior division

Department of Mechanical Engineering, Matthew Cavalli, Chair
$50 monetary award and certificate for project in the mechanical engineering category, Senior division
$50 monetary award and certificate for project in the mechanical engineering category, Junior division

School of Graduate Studies: Wayne Swisher, Interim Dean
$100 monetary award and certificate for the project related to agriculture, Senior division
$50 monetary award and certificate for the project related to agriculture, Junior division

School of Medicine and Health Sciences: Joshua Wynne, Dean
$200 monetary award and certificate for project related to medical or health sciences, Senior division
$100 monetary award and certificate for project related to medical or health sciences, Senior division
$100 monetary award and certificate for project related to medical or health sciences, Junior division
$50 monetary award and certificate for project related to medical or health sciences, Junior division

Department of Basic Sciences: Malak Kotb, Chair
$100 monetary award and certificate for project related to medical or health sciences, Senior division, 2 winners
$100 monetary award and certificate for project related to medical or health sciences, Junior division, 2 winners
$50 monetary award, and a certificate for project in the area of life sciences, Senior division, 2 winners
$50 monetary award and certificate for project in the area of life sciences, Junior division, 2 winners
$100 monetary award and certificate for project related to microbiology/immunology or infectious disease, Senior division, 2 winners
$50 monetary award and certificate for project related to microbiology/immunology or infectious disease, Junior division, 2 winners

Department of Pathology: Mary Ann Sens, Chair
$100 monetary award and certificate for project related to medical or health sciences, Senior division, 2 winners
$100 monetary award and certificate for project related to medical or health sciences, Junior division, 2 winners

College of Nursing and Professional Disciplines: Denise Korniewicz, Dean
$200 monetary award and certificate for project related to nursing or nutrition, Senior division, 2 winners
$100 monetary award and certificate for project related to nursing or nutrition, Junior division, 2 winners

Department of Nutrition & Dietetics: Janice Goodwin
$50 monetary award, $250 scholarship and certificate for project in the area of nutrition and food science, Senior division
$25 monetary award and certificate for project in the area of nutrition and food science, Junior division
Other Organizations, Societies, and Agencies Sponsoring Awards

American Association of Clinical Chemists
$100 monetary award and a certificate for project in clinical chemistry, Senior division

American Chemical Society–Red River Valley Section
$100 Barnes and Noble Gift Card, a certificate, and a 5-in-1 pen for project related to the field of chemistry, Senior or Junior Division

American Meteorological Society
A certificate for project related to meteorology, Senior or Junior divisions, 2 winners

American Psychological Association
A certificate for project related to psychology, Senior or Junior division

American Society of Photogrammetry and Remote Sensing–St. Louis Region
$100 monetary award and a certificate for project in the field of geospatial mapping or earth science, Senior division

American Water Works Association
$75 monetary award and a certificate for project related to drinking water quality, Junior and Senior divisions

ASM Materials Education Foundation
A medallion and a certificate for project in materials engineering, Senior or Junior division

Association of North Dakota Geographers
$125 monetary award and certificate for project in the field of human-environment interaction, Senior division

Association for Women Geoscientists
A certificate for project related to geosciences, Senior or Junior division (Must be a female exhibitor)

Auxiliary to the North Dakota Veterinary Medical Association
$50 monetary award and a certificate for project related to veterinary medicine, Junior division

Coalition for Conservation & Environmental Education
$50 monetary and a large purple rosette ribbon, and a certificate for outstanding environmental project, Junior and Senior divisions

Farmers Union Insurance–North Dakota
$50 monetary award and a Certificate for project related to agriculture, Senior division, 2 winners
$25 monetary award and a certificate for project related to agriculture, Junior division, 2 winners

IEEE–Red River Valley Section
$50 monetary award and a certificate for project in electrical engineering category, Junior and Senior division

Intel Excellence in Computer Science
$200 monetary award and a certificate for project in computer science category, Senior division

ISEF Alumni
$200 and a certificate for project determined by ISEF judges, Senior or Junior division
$100 and a certificate for project determined by ISEF judges, Senior or Junior division

MDU Resources Group, Inc.
$25 monetary award and a certificate for project related to energy or electricity, Senior division, 3 winners
$25 monetary award and a certificate for project related to energy or electricity, Junior division, 3 winners

Mu Alpha Theta
A certificate for project involving modern mathematics, Senior division

National Oceanic & Atmospheric Administration
A certificate and a medallion for project related to improved understanding of the earth’s processes, Junior division

North Dakota Academy of Family Physicians
$50 monetary award and certificate for project related to medicine, Senior division

North Dakota Dental Foundation
Other Organizations, Societies, and Agencies Sponsoring Awards

$50 monetary award and a certificate for project related to dentistry, Senior division, 2 winners
$50 monetary award and a certificate for project related to dentistry, Junior division, 2 winners

**North Dakota Dietetic Association**
$100 monetary award and a certificate for project related to human nutrition and dietetics, Senior division

**North Dakota Geological Society**
$50 monetary award and a certificate for project in the field of geology or earth science, Junior and Senior divisions

**North Dakota Optometric Association**
$50 monetary award and a certificate for project in the field of optometry, Senior division, 2 winners
$50 monetary award and a certificate for project in the field of optometry, Junior division, 2 winners

**North Dakota Pharmacists Association**
$100 monetary award and a certificate for project in the field of pharmacology, Senior division
$75 monetary award and a certificate for project in the field of pharmacology, Junior division

**North Dakota Physics Teachers Association**
$20 monetary award, t-shirt, and a certificate for project in the area of physics or physical science, Junior and Senior divisions

**North Dakota Rural Water Systems Association**
$100 monetary award and a plaque for project related to water quality, Senior division

**North Dakota Society for Clinical Laboratory Science**
$50 monetary award and a certificate for project related to laboratory medicine, Junior and Senior divisions

**North Dakota Soil Conservation District/Auxiliary**
$150 monetary award and a certificate for project related to soil conservation, Junior and Senior divisions
$50 monetary award and a certificate for project related to soil conservation, Junior and Senior divisions

**North Dakota State Science and Engineering Fair Association**
$50 monetary award and a certificate for project in the Biochemistry category, Senior division
$50 monetary award and a certificate for project in the Biochemistry category, Junior division
$50 monetary award and a certificate for project in the Botany category, Senior division
$50 monetary award and a certificate for project in the Botany category, Junior division
$50 monetary award and a certificate for project in the Environmental Science (pollution related) category, Senior division
$50 monetary award and a certificate for project in the Environmental Science (pollution related) category, Junior division

**North Dakota Veterinary Medical Association**
$100 monetary award and a certificate for project related to veterinary medicine, Senior division
$75 monetary award and a certificate for project related to veterinary medicine, Senior division
$25 monetary award and a certificate for project related to veterinary medicine, Junior division

**North Dakota Water Environment Association**
$75 monetary award and a plaque for project related to drinking water quality, Senior division
$75 monetary award and a plaque for project related to drinking water quality, Junior division

**Ottertail Power Company**
$50 monetary award and a certificate for project related to energy or electricity, Senior division, 3 winners
$50 monetary award and a certificate for project related to energy or electricity, Junior division, 2 winners

**Ricoh Corporation**
A certificate for project related to environmentally friendly businesses, Senior division
Other Organizations, Societies, and Agencies Sponsoring Awards

Society for In Vitro Biology
A certificate for project in the area of tissue culture, 11th-grader

Society of Automotive Engineers
$100 monetary award and a certificate for best project in mobility engineering, Junior and Senior division

United States Department of Health and Human Services
A certificate for project healthy life style, Junior or Senior division

United States Air Force
A laptop backpack, traveling ear buds and case, rotating flash drive, a 4 port hub, and a certificate for a project that has applications useful to the Air Force, 4 winners, Junior or Senior division

United States Army
A backpack, Nalgene water bottle, a notebook, and a certificate for project, all categories considered, Senior Division

United States Metric Association
A certificate for project using metric system for measurements, Junior division, 5 winners

United States Navy
Educational recognition award valued at $75, a medallion and a certificate for project, all categories considered, Senior division, 3 winners
A medallion and a certificate for project, all categories considered, Junior division, 3 winners

Virginia George Inheritance Fund
$125 monetary and a certificate for project in the field of behavior science, Senior division
$75 monetary and a certificate for project in the field of behavior science, Junior division

Water Environment Federation
A certificate for project related to water quality or water conditions, Junior or Senior division

Xcel Energy
$25 monetary award and a certificate for project related to energy or electricity, Junior division, 3 winners
$25 monetary award and a certificate for project related to energy or electricity, Senior division, 3 winners

Yale Science and Engineering Association
A medallion and a certificate for project in areas of computer science, Senior division

All awards are subject to change.
Thank You!

Thank you to each student for participating in this year’s North Dakota Science and Engineering Fair! We also thank the parents, teachers, and all those who supported them along the way. For more information about the Fair, photos, videos, and the awards list, go to:

http://und.edu/ndssef/