|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Bio21 | | | | | | |
| Indicator | Component | 0 | 1 | 2 | 3 | Evidence and Location *(Students should provide evidence for the score selected and assist the judges to find the components in their project.)* |
| **Science Content** | Nature-Inspired Design | The project does not incorporate nature-inspired design. | Project minimally incorporates nature-inspired design. | Project consistently incorporates nature-inspired design. | Project incorporates nature-inspired design in an innovative manner. | (3.  The orb spider silk is stronger and more elastic than steal, its structure reduces impact damage, and pigments change with background. These qualities of spider silk can be utilized to protect cell phone screen damage. This idea provides economic and environmental benefits. (See home tab and silk screen tab). |
| Scientific Understanding | The project does not reflect a scientific understanding of the organism(s) or biological process involved. | Project reflects little scientific understanding of the organism(s) or biological process involved. | Project reflects a scientific understanding of the organism(s) or biological process involved. | Project reflects a comprehensive scientific understanding of the organism(s) or biological process involved. | (3)Research on orb weaver spider, discussions with naturalist experts, observations in nature during trip to Costa Rica. See background tab on website. |
| **Science Research** | Literature Review | The project does not include any valid scientific resources. | Project includes three or fewer valid scientific resources and/or lacks a primary source of information. References may not be clearly documented. | Project includes four or fewer valid scientific resources, one of which is primary. References are clearly documented. Resources contribute to project development. | Project includes five or more valid scientific resources, at least two of which are primary. References are clearly documented. Resources contribute to project development. | (2) See work sited tab on website and Scientific Advisors/Experts tab |
| Experiment: Elements | An experiment is not included in the project. | One or more elements (abstract, introduction, materials and methods, results, discussion) are missing and/or unclear. | All elements of the experiment (abstract, introduction, materials and methods, results, discussion) are clearly presented. | All elements of the experiment (abstract, introduction, materials and methods, results, discussion) are clear, well developed and accurately presented. | (3) The experiment includes all required elements  See Experimental Design tab under “more” |
| Experiment:  Validity | An experiment is not included in the project. | Experiment lacks scientific basis and/or may be invalid. Experiment contributes minimally to the development of the project. | Experiment has some basis in gathered research and/or scientific information and is valid. Experiment contributes to the development of the project. | Experiment has a strong basis in gathered research and/or scientific information and is valid. Experiment contributes directly to the development of the project. | (3) The experiment used valid science and research to accurately draw conclusions about the validity of our project. See Experimental Design tab under “more” |
| **Science Application** | Demonstration, model or prototype | The project does not model or demonstrate the idea. | Project includes a demonstration, model or prototype of the idea but is minimally effective in communicating function and feasibility. | Project includes a demonstration, model or prototype of the idea that effectively communicates function and feasibility. | Project includes a detailed and well-refined demonstration, prototype or model of the idea that is highly effective in communicating function and feasibility. | (3) Prototype is an enlarged version of project idea. The prototype accurately depicts the layers of the phone and location of silk screen |

****