

New technologies pay off
Faculty receive grants from
Washington Technology Center



The Washington Technology Center recently awarded grants to eight Washington research groups teamed with local companies to commercialize new technologies. Four of these grants went to Washington State University faculty.

The 2006 RTD awards winners from WSU are: **Diter von Wettstein**, Crop & Soil Sciences; **Jinwen Zhang**, Wood Materials & Engineering; **Carter Clary**,

Biological Systems Engineering; **Vikram Yadama**, **Karl Englund**, and **Robert Tichy**, Wood Materials and Engineering.

Through support from WTC, these collaborative partners are working to revolutionize everything from commercial wheat crops and breakfast cereal to disposable plastic cutlery and decking materials. WTC allocates more than \$1.3 million annually to the RTD grants program, which provides seed funding to principal investigators teamed with entrepreneurial companies on technology research projects that show strong commercial potential. Applicants are eligible for financial awards ranging from \$100,000 for initial proof-of-concept projects to \$300,000 for multi-phase research.

The process is competitive and the goal is clear: to transition Washington state's most promising innovations into commercial products, company growth and high-wage jobs. The Washington Technology Center has supported 285 technology commercialization projects through its RTD program over the last decade.

The grants have proved effective in helping transition novel technologies from "good ideas" into commercially-viable ventures. From this initial funding, academic researchers and companies are better able to attract add-on funding from federal grants, angel investors, and industry partners. Annual follow-up surveys show that WTC-assisted faculty and companies have been successful in leveraging RTD grants into more than \$400 million in additional funding. WTC estimates that through its work with Washington entrepreneurs and academic researchers, over 7,000 new technology jobs have been created in our state, many of these from RTD award recipients.

More information about the RTD grant program is available on WTC's website. Click on <http://www.watechcenter.org/> to access the site. Short summaries for the WSU-connected projects are below.

Arcadia Biosciences, Seattle, has teamed with **Dr. Diter von Wettstein** at WSU to accelerate the development of new wheat cultivars for Washington crops. Incorporating Arcadia's Nitrogen Use Efficiency gene into the wheat may result in reduced fertilizer costs for farmers, improved wheat quality and limited environmental damage of excess nitrogen leaching into groundwater. The partners are also working to create new strains of wheat that reduce the allergens linked to celiac disease. This gluten sensitivity affects about 3 million Americans. Washington is the third highest wheat producing state in the U.S. and its wheat industry is a \$450 million business. However, the state faces increasing competition from foreign markets. Finding ways to quickly grow and harvest higher-quality wheat will close this gap, reduce costs to farmers, and open up new revenue for the state's wheat industry.

Cascade Quality Molding, Yakima, is looking to develop and manufacture biodegradable disposal food service cutlery. Billions of cups, utensils and plates are used in the U.S. each year; more than half of these are made of petrochemical plastics, which make them a waste hazard. Biodegradable products present a more environmentally friendly alternative. However, performance and price continue to be challenges. Cascade is partnering with **Dr. Jinwen Zhang** at WSU to develop a product that uses wood fiber and PHA composites (thermoplastics derived from corn starch or sugar). This combination produces a strong, heat-resistant product with readily available base products and low production costs. Cascade's goal is to produce the cutlery at 50 percent less cost than similar products on the market, and scale production to

meet commercial demand.

Tree Top, Selah, is partnering with **Dr. Carter Clary** from Washington State University to produce dried fruit using microwave vacuum drying. The ready-to-eat cereal market is estimated in billions of dollars. Adding dried fruit has become a widely accepted practice. The trend has been to use vacuum or freeze-drying methods to produce the fruit. This is labor intensive, expensive and produces small quantities. Microwave vacuum drying is an attractive alternative, producing high-quality fruit at a lower cost. In earlier studies, Tree Top and Dr. Clary were successful in producing prototypes of various fruits and berries. In this follow-on study, the team is focused exclusively on drying apples, and testing various sugar additives to achieve maximum product taste and texture. They are also looking into the feasibility of producing the drying equipment for commercial sale to fruit processors.

Vaagen Brothers, Colville, is an industry leader in lumber manufacturing, processing between 2,500 and 3,000 tons of logs every day. The result is a high volume of wood residue. In its raw form, this residue has a low profit margin. The ability to convert this waste into a new source of revenue as a staple in wood-plastic composites would greatly diversify and strengthen the lumber business. The U.S. market for residential decking is estimated at \$3.5 billion annually; WPCs currently account for only 15 percent. However, their use in commercial and residential decking products is growing. To capture a greater share of this market, WPCs must gain wider acceptance by meeting standards for improved performance, appearance, low chemical use, and cost effectiveness. Vaagen Brothers and **Drs. Vikram Yadama, Karl Englund, and Robert Tichy** tested the feasibility of using sawmill waste to manufacture WPCs in a 2004 study with excellent results. This phase-two grant will go toward perfecting the formula for producing WPCs that are ideal for use in commercial decking and gaining building code acceptance for their use in this market.