



## TRANSFORMING AGRICULTURAL RESEARCH

NCI is providing essential computational and data services to support research, and which implement innovative agricultural information services, aiming to secure and enhance food production. An ANU team, recipients of industry funding, is working to enhance the efficiency of photosynthesis, the world's most important chemical process.

Photosynthesis enables plants to convert CO<sub>2</sub> from the air into fibre and food. The research exploits advanced computational simulations to understand the chemistry of the Rubisco enzyme, at the heart of the photosynthesis process. The team aims to enhance energy, water and nutrient utilisation for higher-yielding crops and to improve the adaptation of plants for the production of sustainable biofuels.

NCI also provides the critical information infrastructure underpinnings of the National Agricultural and Environmental Science Precinct, an ANU–CSIRO collaboration announced by the Minister for Industry in December 2014 and funded (\$18 million) by the Science and Industry Endowment Fund. The precinct brings together Australia's greatest concentration of crop and plant scientists to undertake transformational research essential to food security, in the context of global population growth, climate change, and the need for sustainable land management.

### IMPACTED GOVERNMENT PORTFOLIOS:

Industry, Innovation and Science  
Environment and Energy  
Agriculture and Water Resources

In the coming decades, intensive croplands, rangelands and pasturelands will be under growing pressure to increase productivity as the global population is predicted to reach 9 billion by 2050. The comprehensive global monitoring of the status and productivity of food growing regions is crucial for future food production. In response to this need, CSIRO's Data61, together with NCI, are developing the RAPP map—a spatial data platform for the Rangeland and Pasture Productivity activity of the Group on Earth Observation Global Agricultural Monitoring (GEOGLAM) initiative, providing time-series data about the state of global rangelands. This will allow national and regional tracking of resources that sustain livestock production.