



Canada Foundation for Innovation  
Fondation canadienne pour l'innovation

## BACKGROUND

The Canada Foundation for Innovation (CFI) investment of \$7.9 million will provide Canadian radio astronomers access to the Atacama Large Millimeter Array (ALMA) in Chile. ALMA is, by international consensus, the most important development in radio astronomy and will be for the next 20 years. It is described as the first “world observatory,” costing over \$1 billion. The scientific case for this revolutionary telescope is overwhelming.

ALMA will make it possible to witness the formation of the earliest and most distant galaxies. It will also look deep into the dust-obscured regions where stars are born to examine the details of star and planet formation. But ALMA will go far beyond these main science drivers, and will have a major impact on virtually all areas of astronomy. It will be a counterpart to the most powerful optical/infrared telescopes, such as ESO's Very Large Telescope (VLT) and the Hubble Space Telescope, with the added advantage of being unhindered by cosmic dust opacity.

Access to ALMA will help maintain Canada's position amongst the top three nations in terms of academic research in radio astronomy. ALMA will be of great importance to our understanding of the origins of stars and planetary systems. Stellar nurseries are completely obscured at optical wavelengths by dense “cocoons” of dust and gas, but ALMA can probe deep into these regions and study the fundamental processes by which stars are assembled. Moreover, it can observe the major reservoirs of biogenic elements (carbon, oxygen, and nitrogen) and follow their incorporation into new planetary systems.

ALMA represents the merger of a number of major millimeter array projects into one global project. ALMA is a 15-country program (including Canada) which includes all the leading research institutions in astronomy for which this is the priority program. It is jointly led by the National Radio Astronomy Observatory in the United States and the European Southern Observatory. Canada's participation is led by Dr. Andrew Taylor, Professor of Radio Astronomy at the University of Calgary.

This announcement is the fifth of nine large-scale international research projects being funded under the CFI's two International Funds—the *International Joint Ventures Fund* and the *International Access Fund*. The *International Access Fund*, which includes projects such as ALMA, provides access for Canadian institutions and their best researchers to facilities in other countries and major international collaborative programs. They will perform innovative research through unique collaborative research opportunities that will lead to significant benefits for Canada.