



RESEARCH  
**WORKS**



**1 9 9 8**

**A**s one of Canada's five largest research-intensive universities, the University of Alberta plays a major role in meeting the strategic challenges facing Alberta and Canada today. With more than 2,200 faculty, almost 3,000 support staff and 30,000 students, the University is a proud partner with industry and government in expanding Canada's global competitiveness.

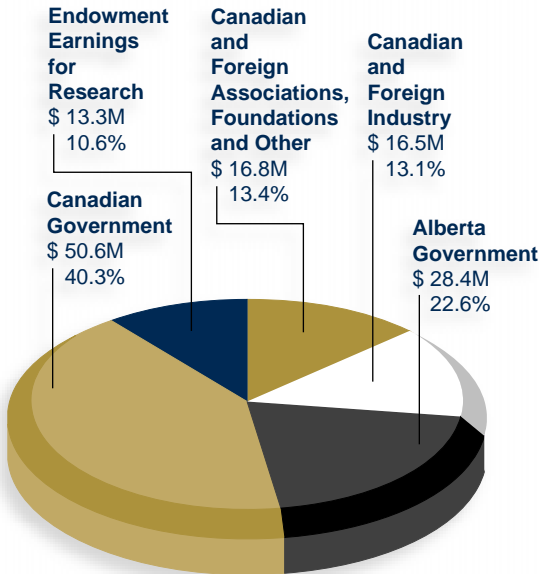
The largest research institution in the province, the University of Alberta continues to increase its research capability, extend its industrial and government partnerships, and is a major engine of economic development through the transfer of University-based technology and knowledge to the commercial sector.

Research Works '98 sets out the economic impact of U of A research on the Edmonton, Alberta and Canadian economies. Research works in many ways, from bringing new technologies to market to providing employment to thousands of people in the Capital Region. Most of all, research works by accomplishing what a great university does best: creating and disseminating knowledge.

### Research Funding by Source 1997/98 (in millions)

Total Research Funding from all sources: \$125.6 M

The University of Alberta is among the top five Canadian universities in research funding.



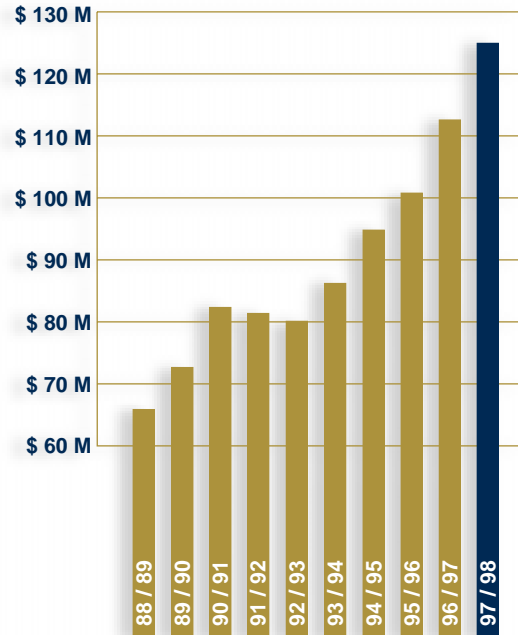
### Research Works by attracting funding from many sources

In 1997/98 the University of Alberta received \$125.6 million from external sources for sponsored research:

- \$50.6 million in Canadian Government funding
- \$28.4 million from the Alberta Government, including \$15.3 million from the *Alberta Heritage Foundation for Medical Research*
- \$12.6 million from Canadian industry
- \$13.3 million from Canadian associations, foundations, institutes, local governments and individuals
- \$7.4 million from foreign governments, industries, associations, institutes, foundations and other sources
- \$13.3 million from endowment earnings for research

### Research Funding 1988/89 to 1997/98 (in millions)

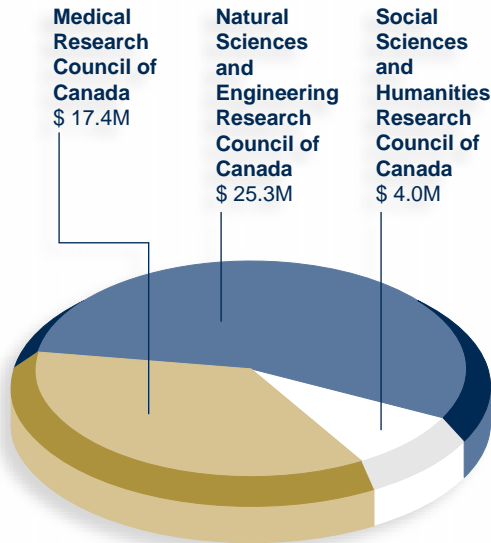
Since 1988/89, the University of Alberta has received more than \$895 million for research from external sources. Over the past five years alone, this funding total has increased by 40%.



**Federal Granting Councils,  
University of Alberta Awards,  
1997/98** (in millions)

The University of Alberta is in the top five Canadian universities in research awards from the three Federal Government granting councils.

Total Funding: \$46.7M



**Research Puts People to Work**

University of Alberta research funding is responsible for almost 7,900 direct and indirect jobs in Edmonton and Alberta.

More than 2,720 University employees are paid through sponsored research:

- 1,073 are full-time
- 1,649 are part-time staff, of whom more than 1,000 are students
- their salaries and benefits totalled more than \$70,680,000 in 1997/98

An estimated 5,170 full-time and part-time jobs have been created indirectly **outside** the University from its sponsored research funding.

Economic Development Edmonton estimates that more than half of the conventions and conferences held in the Capital Region relate to the University of Alberta.

# Research Works

**because of  
Federal Networks  
of Centres of Excellence**

University of Alberta researchers participate in all eleven of the Federal Networks of Centres of Excellence (NCEs), which link universities, industry and government across Canada in applied research and development. The eleven NCEs will bring at least \$35 million in research funding to the University through 2000.

- Canadian Bacterial Diseases Network (CBDN)
- Canadian Genetic Diseases Network (CGDN)
- Canadian Institute for Telecommunications Research (CITR)
- Health Evidence Applications and Linkage Network (HEALNet)
- Intelligent Sensing for Innovative Structures (ISIS)
- The Institute for Robotics and Intelligent Systems (IRIS)
- Mechanical and Chemimechanical Wood-Pulps Network
- Microelectronics Research Network (MICRONET)
- Protein Engineering Network of Centres of Excellence (PENCE)
- Sustainable Forest Management Network (SFM)
- TeleLearning Research Network (TL-RN)

**Two of the NCEs, Protein Engineering Network (PENCE) and Sustainable Forest Management, have their national scientific and administrative headquarters at the University of Alberta.**

**As well, the University is the headquarters of the Prairie Centre of Excellence for Research on Immigration and Integration established in 1996.**

# Research

...because of major contributions

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- Alberta Cancer Foundation  
Chair in Palliative Care
- Alberta Construction Association/NSERC Senior  
Industrial Research Chair in Construction  
Engineering and Management
  - Alberta Heart Foundation Chair in  
Cardiovascular Research
- Alberta Microelectronic Corporation/NSERC  
Senior Industrial Chair in Thin Film Engineering
- AltaRex/MRC Chair in Tumour Immunology
  - Walter Stirling Anderson Chair in Surgery
    - Astra Chair in Asthma Research
  - Ronald K. Bannister Chair in Business
    - Max Bell Foundation
  - Belzberg Chair in Constitutional Law
    - Chair in Bioethics
- Biomira/MRC Chair in Immunoconjugates
  - Breton Plots Endowment Fund
  - Bristol-Myers Squibb Chair in  
Protein/Peptide Metabolism
- John Carter Callaghan Endowed Chair in  
Cardiovascular and Thoracic Surgery
  - C.W. Carry Chair in Steel Structures
  - Carthy Foundation Chair in Business
    - Chartered Accountants Chair
    - Certified General Accountants of  
Alberta Chair in Accounting
    - A.F. (Chip) Collins Chair in Finance
    - Cooperative Chair in Agricultural  
Marketing and Business
- George M. Cormie Professor of Business
  - Firefighters Chair in Burn Research
  - Eldon D. Foote Chair in International  
Business/International Law
- J. Alan Gilbert Chair in Medical Education

# Works...

for research and endowed chairs

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- Glaxo Chair in Viral Research
- Thornton A. Graham Chair in Business
- Dr. J.T. Hugill Professorship in Pain Management
- Huculak Chair in Ukrainian Culture  
and Ethnography
- Chair in Industrial Safety and Loss Management
- Stephen A. Jarislowsky  
Distinguished Chair in Finance
- The Killam Memorial Professorships (2)
- Walter C. Mackenzie Visiting Professorship
- Merck Frosst/MRC Chair in Pharmacoeconomics
- Stanley A. Milner Chair in Leadership
- Muttart Chair in Clinical Immunology and  
Autoimmunity
- NOVA/NSERC Senior Industrial Research Chair in  
Advanced Pipeline Materials
- NOVA/NSERC Junior Industrial Research Chair in  
Welding and Corrosion
- David Peikoff Chair in Deafness Studies
- Peter H. Pocklington Chair in Free Enterprise
- Ernest and Gertrude Poole Chair in Management  
for Engineers
- Syncrude/NSERC Industrial Chair in Oil Sands  
Research
- Taiho Endowed Foundation (for Canada/Japan  
collaboration in pharmaceutical research)
- TELUS Chair in Strategic Management
- Henry Marshall Tory Chairs (various disciplines)
- Henri M. Toupin Chair in Neurological Sciences
- Tripartite Chair for Occupational Health
- The Variety Club and Northern Alberta Children's  
Hospital Foundation Pediatric Clinical Research  
Professorship
- Winspear Foundation Distinguished  
Chair in Professional Accounting

### ...are Partners in Research

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- African Economic Research Consortium
- American Association of Colleges of Pharmacy
- American Waterworks Association Research Foundation
- ASEAN Institute of Forest Management
- Burroughs Wellcome Fund
- Chemical Manufacturers Association
- Ceramic Protection Corp.
  - Egyptian Cultural and Educational Bureau
  - The Ford Foundation
  - Bernice Peltier Huber Charitable Trust
- Howard Hughes Medical Institute
- Huntington's Disease Society of America
- Idaho Transportation Board
  - International Institute for Environmental Development
    - The Journal of the International Ozone Association
    - Juvenile Diabetes Foundation International
- Korea Rural Development Administration

### at the University of Alberta

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- Lankenau Medical Research Centre
- Los Alamos National Laboratory (University of California)
- Lilly Center for Women's Health
- National Alliance for Research (US) (NARSAD)
- National Institutes of Health (US)
- National Kidney Foundation (US)
- National Science Foundation (US)
- The Noguchi Institute
- North American Loon Fund
- North Atlantic Treaty Organization (NATO)
- Oxford University Press
- Pacific Egg and Poultry Scholarship and Research Foundation
- Palm Oil Research & Development Board
- Prader-Willi Association (US)
- RP Eye Research Foundation
- Research Foundation for Health and Environmental Effects
- United States Department of the Army
- United States Department of Health and Human Services
- United States Department of the Interior
- University Hospitals of Cleveland
- Wenner-Gren Foundation for Anthropology
- Whitaker Foundation

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- Abatibi-Consolidated Inc.
  - Acres International Ltd.
  - Agra Earth and Environment Ltd.
  - Alberta Construction Industry (Professorship funds)
  - Alberta Microelectronic Corporation
  - Alberta Motor Association Insurance Co.
  - Alberta-Pacific Forest Industries
  - Alberta Power Ltd.
  - Almita Manufacturing Ltd.
  - Alternative Fuel Systems
  - Alula Biological Consulting
  - Anderson Exploration Ltd.
  - AQUALTA Inc.
  - Beatrice Foods Inc.
  - Bell Northern Research
  - Bellanca Developments Ltd.
  - Better Made Wheelchair
  - Bovar Inc.
  - Boreal Laser Inc.
  - The Brick Warehouse Corporation
  - Canada Trust
  - Canadian Association of Japanese Auto Dealers
  - Canadian Microelectronics Corporation
  - Cansibmaral Elk Ltd.
  - Cantox Inc.
  - Celanese Canada
  - Century Exploration (1988) Ltd.
  - Ceramic Protection Corp.
  - CIBC
  - CN North America
  - Crestar Energy
  - DB Robinson & Associates
  - Dedronic Decisions Ltd.
  - Allan Douglas & Associates
  - Dow Chemical Canada Inc.
  - Dupont Canada Inc.
  - Eli Lilly Canada Inc.
  - EBA Engineering Consultants Ltd.
  - Environmental Science and Technology Alliance Canada
  - EPCOR Utilities Inc.
  - Europa Travel
  - Field Atkinson Perraton
  - Fountain Tire
  - Fraser Paper Inc.
  - Geospec Consultants Ltd.
  - Geo-X Systems Ltd.
  - Gerdau MRM Steel Inc.
  - GKO Design Consultants Inc.
  - Glyco Design Inc.
  - Golder Associates Ltd.
  - Guilford Press
  - Headed Reinforcement Canada
  - Hemsol Inc.
  - Hewlett-Packard Canada Inc.
  - Hydrocarbon Technologies Canada Inc.
  - INCO Ltd.
  - Interprovincial Pipe Line Company
  - Inland Cement
  - Inland Construction
  - Komex International Ltd.
  - Lithoprobe
  - Madenta Communications Inc.
  - Madison Enterprises Corporation
  - Merck Frosst Canada Inc.
  - Micrologix Biotech Inc.
  - Milner Fenerty
  - Mining Industry (Professorship funds)
  - MOSAID Technologies Inc.
  - Motorola Canada Ltd.
  - MPB Technologies
  - NorTerra Inc.
  - North American Road Ltd.
  - Northern Telecom Canada
  - NOVA Chemicals Ltd.
  - NOVA Corporation
  - O'Connor Associates Environment Ltd.
  - O'Hanlon Paving
  - Omni Film Productions
  - Steele O'Neill and Associates
  - Pacific Phytometric Consultants
  - Panoramic Viewing Systems Inc.
  - PCL Constructors Inc.
  - Plitoni Enterprises Ltd.
  - Prairie Biological Research
  - R & L Environmental Services Inc.
  - Reed Stenhouse
  - Reid Crowther
  - Royal Bank Financial Group
  - St. Laurent Paperboard Inc.
  - Sciox
  - Shell Canada Ltd.
  - Shivasoft Canada
  - SmithKline Beecham Pharma Inc.
  - Solvay Kingswood Inc.
  - SubTerra Corporation
  - Suncor Inc.
  - Sylvan Consulting Ltd.
  - Synsorb Biotech Inc.
  - TELUS Corporation
  - Thompson Brothers Construction Ltd.
  - Timberland Consultants Ltd.
  - Timminco Metals
  - Tirecraft Auto Centre
  - TransAlta Utilities
  - TRLabs Inc.
  - UMA Engineering Ltd.
  - Veritas Communications Inc.
  - Visionmart Inc.
  - Waiward Steel Fabricators Ltd.
  - The Westaim Corporation
  - Westec Microbes Ltd.
  - Weyerhaeuser Canada Ltd.
  - The Wyatt Company
  - Zeneca Pharma Inc.

# to advance

# knowledge

## Research Works

**...in agriculture,  
food and nutrition,  
forestry, renewable  
resources, and  
agriculture-biotechnology**

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- Ainsworth Lumber
- Agriculture and Food Council
- Alberta Agricultural Research Institute
- Alberta Agriculture Industries Ltd.
  - Alberta Barley Commission
  - Alberta Cattle Commission
- Alberta Chicken Producers' Marketing Board
  - Alberta Egg Producers' Board
- Alberta Hatching Egg Marketing Board
  - Alberta Heritage Foundation for Medical Research
- Alberta Milk Producers' Association Ltd.
  - Alberta Milk Producers' Society
- Alberta-Pacific Forest Industries Inc.
- Alberta Pork Producers' Development Corporation
  - Alberta Poultry Industry Council
  - Alberta Pulse Growers' Commission
- Alberta Turkey Producers' Marketing Board
  - Alberta Wheat Pool
    - ANC Timber Ltd.
- Association of Universities and Colleges of Canada
  - Beef Information Centre
  - Biovision Seed Research Ltd.
  - Canadian Broiler Hatching Egg Marketing Agency
- Canadian Cattlemen's Association
  - Canadian Fitness and Lifestyle Research Institute
- Canadian Forest Products Ltd. (BC)

- Canadian Institute of Food Science and Technology Alberta
- Canadian Turkey Marketing Agency
- Canola Council of Canada
- Canterra Seeds
- Champion Feed Services Ltd.
- Children's Health Foundation of Northern Alberta
- Cobb-Vantress Inc.
- Dairy Farmers of Canada
- Daishowa-Marubeni International Ltd.
- Ducks Unlimited Canada
- City of Edmonton
- Eli Lilly Canada Inc.
- Express Pipeline Ltd.
- Finnsugar Bioproducts
- Foothills Forest
- Friends of Banff National Park
- Hoffman-LaRoche
- International Institute of Environment and Development
- Lakeland Peat Moss Ltd.
- Land Stewardship Centre of Canada
- Little Red River Cree Nation
- Louisiana Pacific Canada Ltd.
- Manning Diversified Forest Products
- Maple Leaf Poultry
- Medical Research Council
- Millar Western Industries
- Mistik Management Ltd.
- National Livestock Research Institute
- National Research Council
- Natural Sciences and Engineering Research Council
- NOVA Gas Transmission Ltd.
- The Ontario Egg Producers' Marketing Board
- Palm Oil Research and Development Board
- PanCanadian Petroleum
- Pioneer Hi-Bred International Inc.
- Potato Development Inc.
- Poultry Research Council
- Premier Horticulture Ltd.
- Ralston Purina Canada Inc.
- Ranger Slave Lake Pulp Corporation
- St. Laurent Paperboard Inc.
- Shaver Poultry Breeding Farms Ltd.
- Slave Lake Pulp Corp.
- Suncor Inc.
- Sun Gro Horticulture Canada Ltd.
- Svalof Weibull Seed Ltd.
- Syncrude Canada Ltd.
- Walker Seeds Ltd.
- Weldwood of Canada Ltd.
- Western Grains Research Foundation
- Weyerhaeuser Canada
- XL Foods Ltd.
- Zeneca Seeds

## Departments

### Canadian, Alberta and Municipal Government Departments and Agencies help Research Work at the University of Alberta

- Agriculture and AgriFoods Canada
  - Alberta Advanced Education and Career Development
  - Alberta Agriculture, Food and Rural Development
- Alberta Agricultural Research Institute
  - Alberta Cancer Board
- Alberta Community Council on AIDS
  - Alberta Community Development
  - Alberta Economic Development
    - Alberta Education
  - Alberta Energy and Utilities Board
  - Alberta Environmental Protection
  - Alberta Environmental Protection Fish and Wildlife Services
- Alberta Family and Social Services
  - Alberta Health
  - Alberta Heritage Foundation for Medical Research
    - Alberta Hospital Edmonton
      - Alberta Labour
  - Alberta Oil Sands Technology and Research Authority
    - Alberta Research Council
- Alberta Science and Research Authority
  - Alberta Transportation
    - Aspen Regional Health Authority
    - Government of British Columbia
  - British Columbia Children's Hospital
    - British Columbia Forestry
  - British Columbia Ministry of Forests
    - Canada Council
- Canada Mortgage and Housing Corporation
  - Canadian Forest Service
  - Canadian Genome Analysis and Technology Program
    - Canadian Heritage
- Canadian International Development Agency
  - Canadian Space Agency

## and Agencies

- Canadian Wheat Board
- Capital Health Authority
- Children's and Women's Health Centre
- Children's Health Foundation
- Chinook Regional Health Authority
- Cross Cancer Institute
- Crossroads Regional Health Authority
- Department of National Defence (Canada)
- East Central Regional Health Authority
- Economic Development Edmonton
- City of Edmonton
- City of Edmonton Public Works
- Employment and Immigration Canada
- Environment Canada
- Environment Protection and Enhancement Fund (Alberta)
- Farming for the Future (Alberta)
- Fort McMurray District Health Unit
- Geological Survey of Canada
- Grande Prairie Public Library
- Health Canada
- Human Resources Development Canada
- Indian Affairs and Northern Development Canada
- Industry Canada
- Department of Justice (Canada)
- Keeweenaw Lakes Health Authority
- Manitoba Hydro
- Manitoba Natural Resources
- Meadow Lake Provincial Park (Saskatchewan)
- Medical Research Council of Canada
- National Health Research and Development
- National Research Council
- Natural Resources Canada
- Natural Sciences and Engineering Research Council of Canada
- Northern Lights Regional Health Authority
- Government of the Northwest Territories
- Parks Canada
- Provincial Health Council of Alberta
- Public Works and Government Services Canada
- Royal Canadian Mounted Police
- Royal Ontario Museum
- Saskatchewan Energy and Mines
- Science Council of British Columbia
- Social Sciences and Humanities Research Council of Canada
- Supply and Services Canada (Edmonton)
- David Thompson Regional Health Authority
- TRIUMF (Canada's National Meson Research Facility)
- University of Alberta Hospitals
- The Vancouver Hospital
- Western Economic Diversification (Canada)
- Westview Regional Health Authority
- Workers' Compensation Board of Alberta
- Government of the Yukon



# Private

# Public

## Associations and Foundations

help Research Work  
at the University of Alberta

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- Access for Seniors
- Action on Smoking and Health
- Alberta Association of Registered Occupational Therapists
- Alberta Association of Registered Nurses
- Alberta Civil Trial Lawyers' Association
- Alberta Community Council on AIDS
- Alberta Conservation Association
- Alberta Egg Producers' Board
- Alberta Historical Resources Foundation
- Alberta Law Foundation
- Alberta Lung Association
- Alberta Medical Association
- Alberta Mental Health Advisory Council
- Alberta Museums Association
- Alberta Occupational Health Nurses Association
- Alberta Paraplegic Foundation
- Alberta Pharmaceutical Association
- Alberta Ready-Mixed Concrete Association
- Alberta Sport, Recreation, Parks and Wildlife Foundation
- Alberta Teachers' Association
- Alberta Teachers' Association Educational Trust
- Alzheimer's Association of Canada
- Alzheimer Society of Edmonton
- The Arthritis Society
- The Calgary Foundation
- Canadian Academic Accounting Association
- Canadian Association of Gastroenterology
- Canadian Association of Petroleum Producers
- Canadian Atherosclerosis Society
- Canadian Cattlemen's Association
- Canadian Certified General Accountants Research Foundation
- Canadian Cochrane Network
- Canadian Council of Cardiovascular Nurses
- Canadian Cystic Fibrosis Foundation
- Canadian Dental Assistants Association
- Canadian Diabetes Association
- Canadian Fitness and Lifestyle Research Institute
- Canadian Foundation for Ileitis and Colitis
- Canadian Gerontological Nurses Association
- Canadian Institute for Advanced Research
- Canadian Institute of Food Science and Technology
- Canadian Institute for Petroleum Industry Development
- Canadian Institute of Theoretical Astrophysics
- Canadian Liver Foundation
- Canadian Lung Association
- Canadian Masonry Research Institute
- Canadian Police Research Centre
- Canadian Psychiatric Research Foundation
- Canadian Red Cross Society
- Cancer Research Society Incorporated
- Caritas Health Group
- Catholic Social Services
- Chemical Manufacturers' Association
- Children's Health Foundation of Northern Alberta
- Coalition of Edmonton Civic Unions
- Crohn's and Colitis Foundation of Canada
- George and Dorothy Davey Endowment Fund
- Denniston Bone Marrow Society
- Diabetes Association (Brooks and District)
- Donner Canadian Foundation
- Ducks Unlimited Canada
- Edmonton Bird Club
- Edmonton Civic Employees Charitable Assistance Fund
- Edmonton Community Foundation

# Public & Private

- Flagstaff Family and Community Services Board
- Friends of Banff National Park
- Friends of the Environment Foundation
- Friends of Multiple Sclerosis Research Fund
- Glaucoma Research Society of Canada
- Glaucoma Research Foundation of Ontario
- Hannah Institute for the History of Medicine
- Heart and Stroke Foundations
- Hospital for Sick Children Foundation
- Institute of Cardiology of Montreal
- Institute for Chemical Science and Technology
- Institute of Pharmaco-Economics
- International Order of Foresters
- Juvenile Diabetes Foundation of Canada
- Kidney Foundation of Canada
- The Killam Trusts
- KPMG Educational Fund
- Ladies Auxiliary, Royal Canadian Legion
- Land Stewardship Centre of Canada
- Clifford E. Lee Foundation
- Manitoba HVDC Research Centre
- March of Dimes Birth Defects Foundation
- McLaughlin Foundation
- MSI Foundation
- Multiple Sclerosis Society of Canada
- Muscular Dystrophy Association of Canada
- National Association of Corrosion Engineers Canadian Region
- National Cancer Institute of Canada
- National Dental Assisting Examining Board

## Associations and Foundations

help Research Work  
at the University of Alberta

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- Ottawa Heart Institute
- Parkinson Foundation of Canada
- Peace River Strategic Society
- Potash and Phosphate Society of Canada
- Roehrer Institute
- RP Eye Research Foundation
- Rural Education and Development Association
- SAE Student Club
- Spina Bifida Association
- Sports Medicine Council of Alberta
- Steel Structures Educational Foundation
- The Students' Union, University of Alberta
- TELUS Bright Futures Foundation
- Tire Recycling Management Association of Alberta
- Molly Towell Perinatal Research Foundation
- Henri M. Toupin Foundation
- Ukrainian Canadian Congress, Thunder Bay
- Ukrainian Canadian Shevchenko Foundation
- Ukrainian Canadian Social Services
- Ukrainian National Federation
- Ukrainian World Congress
- Universiade '83 Foundation Inc.
- University of Alberta Hospitals Foundation
- United Nurses of Alberta
- Wild Rose Foundation
- Wildlife Habitat Canada
- World Wildlife Fund Canada

# Economic

## Diversification

University spin-off companies increasingly are a significant generator of jobs and contribute in an important way to Edmonton's growing reputation worldwide as a "smart city."

### University of Alberta Spin-off Companies

Company	Year Founded	Employees
Acugene Inc./Acugenic Inc.	1997	1
Alberta Asthma Center	1997	11
Alberta Microelectronic Corporation (formerly Alberta Microelectronic Centre)	1982	65
AltaRex Inc.	1995	47
Biomech Designs Ltd.	1982	2
Biomira Inc.	1985	269
Biomotion Inc.	1994	2
Biotex Laboratories*	1989	n/a
Biotools Inc.	1996	23
Boreal Laser Inc.	1988	5
CanBiocin Inc.	1997	3
C-FER Technologies Inc.	1983	50
CV Technologies Ltd.	1992	6
Herbtech Inc.	1994	20
Cytovax (formerly SPI Synthetic Peptides Inc.)	1986	9
DB Robinson and Associates	1976	40
DNA-B Diagnostics	1994	4
DynaStream Inc.	1997	3
Gaia Software	1988	5
Harding Instrument Co.	1969	40
Indico Inc.	1995	3
Integrated Construction Engineering Systems (I.C.E.S.)	1994	2
Isotechnika Inc.	1993	20
Isoclinika**	1996	n/a
Isodiagnostika	1996	17
Isopharmika Inc.	1996	3
L&R Wang and Associates	1990	2
Metabolic Modulators Research	1997	7

### Research Works for Economic Diversification

Active University of Alberta Spin-off companies: **48**  
 Direct jobs in Spin-off companies: **1,255**  
 Indirect jobs created by Spin-off companies: **2,385**  
 Spin-off companies created in 1997/98: **9**

Company	Year Founded	Employees
MTI Meta Tech Inc.	1997	1
Myrias Computer Technologies	1983	6
NerveTech**	1997	n/a
Neurokinetics Inc. (holding company)	1994	0
NeuroMotion Inc.	1996	8
Orthopaedic Innovations Ltd.	1996	6
Ovo-Biotechnica Inc.	1991	1
PharmaTEC Global Inc.	1996	60
Phosphatek	1996	1
PISA Inc.	1995	2
Prairie Biological Research	1984	8
Raylo Chemicals Inc.	1963	150
Regional Data Management Inc.	1996	2
Research Technology Management Inc. (RTM)	1997	4
SimChem Inc.	1994	1
Speaking Dynamics**	1995	n/a
StatCo International Inc.	1994	4
SynPhar Laboratories Inc.	1987	110
SYNSORB Biotech Inc.	1994	25
Telephotogenics Inc.	1996	2
TRLabs – Telecommunications Research Laboratories	1986	180
Transpath Inc.	1996	5
The Laser Institute	1984	15
WavePOINT Systems Inc.	1997	5

\* Merged into Cytovax in 1998

\*\* Closed  
 Indented companies are subsidiaries

# Pharmaceutical research works

Many major health care-related companies and institutes sponsor research at the University of Alberta for the development of new drugs, treatments, applications and clinical trials. Among our research partners are...

- Abbot Laboratories Ltd.
- Allelix Biopharmaceuticals Inc.
- AltaRex Inc.
- AnorMed Inc.
- Apotex Inc.
- Astra Pharmaceuticals
- Bayer Inc.
- Beacon Diagnostics Inc.
- Biotex Laboratories Inc.
- Briana Bio-Tech Inc.
- Bristol-Myers Squibb (Canada)
- Burroughs Wellcome Fund
- Canadian Lipoprotein Conference
- Ciba-Geigy Canada Ltd.
- Control Dynamics Inc.
- Covance
- CroMedica Inc.
- CV Technologies Inc.
- Daiichi Pharmaceutical Co. Ltd.
- Deka Research and Development Corporation
- Dermagraft International
- Eli Lilly Canada Inc.
- Fournier Pharma Inc.
- Fujisawa Canada Inc.
- Genentech Inc.
- Genetics Institute Inc.
- GHBA AG
- Glaxo Canada Inc.
- Glaxo Wellcome Inc.
- Helix Biopharma Corporation
- Hoechst Marion Roussel Canada Research Inc.
- Hoffman-LaRoche Ltd. (Canada)
- Howard Hughes Medical Institute
- Immuno (Canada) Ltd.
- Institut de Recherches Internationales Servier
- Isotechnika Inc.

# for better health

- Janssen-Ortho Inc.
- Janssen Pharmaceutica N.V.
- Lankenau Medical Research Center
- Leo Laboratories Canada Ltd.
- Medtronic (USA)
- Merck Frosst Canada Inc.
- Merck KGaA
- Metabolex Inc.
- Neose Technologies Inc.
- The Noguchi Institute
- Novartis Pharmaceuticals Canada Inc.
- Novo-Nordisk Canada
- Parke-Davis Canada
- Pasteur-Merieux Connaught Laboratories Inc.
- Pfizer Canada Inc.
- Pharmacia & Upjohn
- Phoenix International Corporation
- Rhône-Poulenc Rorer Inc., U.S.
- Sandoz Canada
- SangStat Medical Corporation
- Sanofi Pharmaceuticals
- Schering Canada Inc.
- Searle Canada Inc.
- Sertoli Technologies Inc.
- Sequus Pharmaceuticals, Inc.
- Servier Laboratories
- SmithKline Beecham Biologicals
- SmithKline Beecham Pharma Inc.
- SmithKline Beecham Pharma Inc. (UK)
- Solvay Pharmaceuticals
- Spectral Diagnostics Inc.
- Stiefel Canada Inc.
- SynPhar Laboratories Inc.
- SYNSORB Biotech Inc.
- Upjohn Co. of Canada
- Warner-Lambert Canada Inc.
- The Westaim Corporation
- Wyeth-Ayerst Research

# Energy

## research works

**to advance the frontiers of knowledge, through...**

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- Alberta Energy Co.
- Alberta Oil Sands Technology and Research Authority
- Alternative Fuel Systems Inc.
- Amoco Canada Petroleum Co. Ltd.
- Bayer Inc.
- Canadian Association of Petroleum Producers
- Chevron Petroleum Technology Co.
- Colt Engineering
- Crestar Energy
- Dresco Energy Services Ltd.
- Environmental Science and Technology Alliance Canada
- Express Pipeline Ltd.
- Gulf Canada Resources Ltd.
- Husky Oil
- Imperial Oil Ltd.
- Imperial Oil Resources Ltd.
- Interprovincial Pipe Line Co.
- Mobil Oil Canada
- Mobil Technology Co.
- Nova Chemicals Ltd.
- Nova Gas Transmission Ltd.
- Novacor Chemicals Ltd.
- Novacor Research and Technology Corporation
- Numac Energy
- PanCanadian Petroleum Ltd.
- Petro-Canada Oil and Gas
- Sceptre Resources

## University of Alberta Commercialization Achievements

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**In 1997/98:**

- Licensing revenues exceeded \$4.3 million, the highest of any Canadian university and among the top 25 in North America
- 85 new Reports of Invention were submitted
- 44 patent applications were filed or continued
- 34 new products and technologies were licensed
- 103 licenses are active
- 9 spin-off companies were formed (for a total of 40 since 1994). The rate of spin-off company creation is among the highest in North America
- The University of Alberta and its spin-off companies hold more than 230 issued patents

- Shell Oil Company
- SubTerra Corporation
- Suncor Inc.
- Sunoco Inc.
- Syncrude Canada Ltd.
- Talisman Energy Inc.
- Texaco Canada Resources Ltd.
- Texaco Inc. (USA)
- TransCanada Pipeline Ltd.
- UOP Engineering Products

# International Industries

## Invest in Research at the University of Alberta

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- ACP Technologies Inc.
- American Cyanimid
- Aquanova International Ltd.
- Ashrae
- Baxter Healthcare Corporation
- British Broadcasting Corporation
- Ceramic Protection Corp.
- Chevron Petroleum Technology Co.
- Chevron USA Inc.
- Chinese Petroleum Corporation
- Ciba-Corning
- Ciba-Geigy
- Cobb-Vantress Inc.
- Cochlear Corp.
- Control Dynamics Inc.
- Cor Therapeutics Inc.
- Covance Periapproval Services
- CV Therapeutics
- Daiichi Pharmaceutical Co. Ltd.
- Dow Elanco
- Dura Pharmaceuticals
- E.I. DuPont de Nemours & Co.
- Eisai America Inc.
- Finnsugar Bioproducts Inc.
- Firmenich SA
- Fujisawa USA Inc.
- Hewlett-Packard Co.
- Hoechst Celanese Corp. USA
- Hoffman-LaRoche Inc.
- Human Genome Sciences Inc.
- The IAMS Company
- Infinity
- Thomas D. Mangelsen
- Lockheed Martin Tactical Defense Systems
- Merck KGaA
- Mobil Exploration and Production Technology Center
- Nalco Chemical Company
- Neose Technologies Inc.
- Newcrest Resources Inc.
- Pari GMBH
- Pioneer Hi-Bred International
- Placer (PNG) Poultry Ltd.
- Pro-Neuron Inc.
- Quaker Oats Co.
- Read-Rite Corp.
- Research Corporation Technologies
- Rhône-Poulenc Rorer Inc.
- Roche Laboratories
- Ross Laboratories
- Saudi Aramco
- Institut de Recherches Internationales Servier
- Shell Oil Products Co.
- SmithKline Beecham Pharma (UK) Inc.
- Taiho Pharmaceuticals Co.
- Teledyne Fluid Systems Farris Engineering
- Teledyne Industries Inc.
- Texaco Inc.
- Union Pacific Resources
- UOP Engineering Products
- Wyeth-Ayerst Research

# Post-secondary

## Collaborative activities with other post-secondary institutions world-wide helps research work at the University of Alberta

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- Brandon University
- Brian Hospital, TianJin Medical University
- University of British Columbia
- University of Bristol
- University of Calgary
- University of California (Los Alamos National Laboratory)
- University of California at Los Angeles
- Carleton University
- The Chinese University of Hong Kong
- University Hospitals of Cleveland
- Dalhousie University
- Drexel University
- University of Guelph
- Lakehead University
- Laurentian University
- Université Laval
- University of Leuven
- University of Manitoba
- McGill University
- McMaster University
- Université de Montréal
- Northern Alberta Institute of Technology
- Northern Lights College
- Ohio University
- Ontario Institute for Studies in Education
- Oregon Health Sciences University
- University of Ottawa
- Universidad del Pais Vasco
- Università degli Studi di Pisa
- Princeton University
- Université de Québec
- Queen's University
- University of Rochester
- San Francisco State University
- University of Saskatchewan
- Université de Sherbrooke
- Simon Fraser University
- University of South Carolina
- University of Toronto
- University of Vermont
- University of Victoria
- University of Waterloo
- University of Western Ontario
- University of Windsor
- University of Zimbabwe

# Current

The University of Alberta has long performed research in disciplines (both traditional and emerging) which have an economic impact on Alberta and the world. Examples of current research include:

## Agriculture, Food, and Nutrition

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- Studies of the health benefits of germinated wheat and its use in the development of value-added products.
- New approaches to the evaluation of stress and stress resistance in cattle.
- Mechanisms by which diet fat alters cell structure and function.
- The biological value of anticancer agents present in dairy products. Reducing feed costs by enhancing the nutritional value of barley.
- The importance of dietary intake of beef on the iron status of beef.
- Minimal processing of fruits and vegetables.
- Development of biodegradable containers.
- Research, development and commercialization of oilseed technology.
- Effects of sour gas emissions on health and productivity in Alberta beef and dairy herds.

## Humanities, Social Sciences, and Society

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- First Nations and the Canadian state: understanding the underlying title to Canada and the resolution of the political relationships between them.
- Alternative strategies for deficit reduction: evidence from three Canadian provinces.
- A history of Edmonton's professional theatres, 1965–1995.
- An integrated print and electronic history of women's writing in the British Isles.
- Exploring quality of life changes among low-income elders: how fast are the exercise benefits?
- Dependency and sustainability of small resource communities in Canada.
- Twentieth century Metis political organizations.
- Sport, globalization and cultural diversity – diversity in Canada, Australia and New Zealand.
- Aging and language: cognitive and social cognitive influences on performance.
- Women and economic restructuring in Canada, 1971–96.

# research

- Managing global software outsourcing arrangements: challenge and opportunities for Canadian firms.
- Welfare and Unemployment Insurance in British Columbia.
- Distribution problems in the marketing of Canadian films.
- Ethical issues and public sector restructuring: performance indicators and accountability.
- Development and assessment of learning technologies in distance education.
- Changing literacy in a media age: a qualitative study of young readers.
- Ukrainians in Canada and the United States: cross-border interactions and comparative experiences, 1980s–1990s.
- The influence of young women's experiences on career decisions in science: what are the policy implications?

## Applied Science, Energy and Technology

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- Risks from landslides in Western Canada.
- Wastewater treatment for the pulp industry.
- An assessment of horizontal directional drilling technologies for environmental remediation.
- Behaviour of contaminants in frozen soil.
- Chemical disinfection of water, indicators of performance, and application to industry.
- Fundamental and practical aspects of bitumen recovery from oil sands.
- Structural behaviour of pipelines.
- Image processing and related computational issues.
- Development of porous structured materials.
- Computer imaging, modelling and assessment of skeletal deformities.
- Application of hydrogeology and quantitative migration analysis to petroleum exploration.
- Applications of high powered laser technology to medicine and gas sensing.
- Marine vessels icing in water.
- Flash fire protective clothing.
- Basement walls that dry.
- Environmentally efficient flaring in the energy industry.
- Protocol design for local and metropolitan area networks.

## Forestry

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- Effects of livestock, wildlife and forest harvesting technology on aspen regeneration and forage supply.
- Spatial patterns of abundance of small rodents in Alberta's mixed-wood boreal forest.
- Development of microsatellite markers in white spruce.
- Forest harvesting effects on small mammals and birds in the conifer dominated boreal forests.
- The assessment and restoration of biological communities and biogeochemical processes in mountain lakes affected by past human activity.

## Environment

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- Air quality and lung health in Alberta barns.
- Effects of natural disturbances on fish communities in the Caribou Mountains region.
- Restoration of riparian and flood plain wetlands affected by transportation systems in Jasper National Park.
- Impact of cattle grazing on habitat quality for breeding birds in the aspen parkland.
- Impacts of logging on boreal birds in the mixed-wood forest.
- Effect of oilsand process waters on chemical signals and olfactory function in boreal forest fish.
- The role of buffer strips for maintenance of (a) terrestrial and aquatic communities in the aspen dominated boreal mixed-wood forest and (b) terrestrial, riparian and aquatic communities in the boreal plains.
- Cadmium accumulation in Durham wheat (a current agricultural and environmental issue).

## Health Sciences

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- The location and sources of the electrical fields generated by the brain.
- Enhancing prevention in the practice of family physicians.
- Intracellular assembly of lipoproteins.
- Development of retroviral delivery system for anti-HIV gene therapy.
- The renal injury response.
- Design and evaluation of novel antiviral agents for human immunodeficiency virus and herpes virus.

- Functional, structural and metabolic studies of the failing and infarcted heart.
- Anti-inflammatory effects of histamine in the pathophysiology of asthma.
- Development of synthetic peptides for multiple sclerosis patients with chronic progressive disease.
- Anticancer agents from unique natural product sources.
- Mortality, morbidity and long-term institutionalization after hip fracture.
- A new approach for the prevention and treatment of tuberculosis.
- DNA sequencing and fragment analysis for gene analysis in human genetic disease.
- Successful models of health promotion in an elderly population.
- Development of speech recognition technology for persons with speech impairments.
- Canadian collaborative project on genetic susceptibility to multiple sclerosis.
- Driving and the elderly.

## Biotechnology

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- Microsatellites: genetic markers to reveal the structure of natural populations.
- Development of automated highly sensitive and specific labelling techniques for protein and peptide toxins for a capillary electrophoresis laser-induced fluorescent system.
- Developing a lab-on-a-chip.
- Synthesis and biological function of complex carbohydrates.
- Development of in-vivo applications of nuclear magnetic resonance to medicine.
- Development of advanced hybrid neural prostheses.
- Clinical and basic applications of cardiac electrical mapping.
- Anticancer gene: development of mouse human tumour models and assessment of combined immuno-gene therapeutic effects.

# Current research





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...it makes *sense.*

RESEARCH WORKS