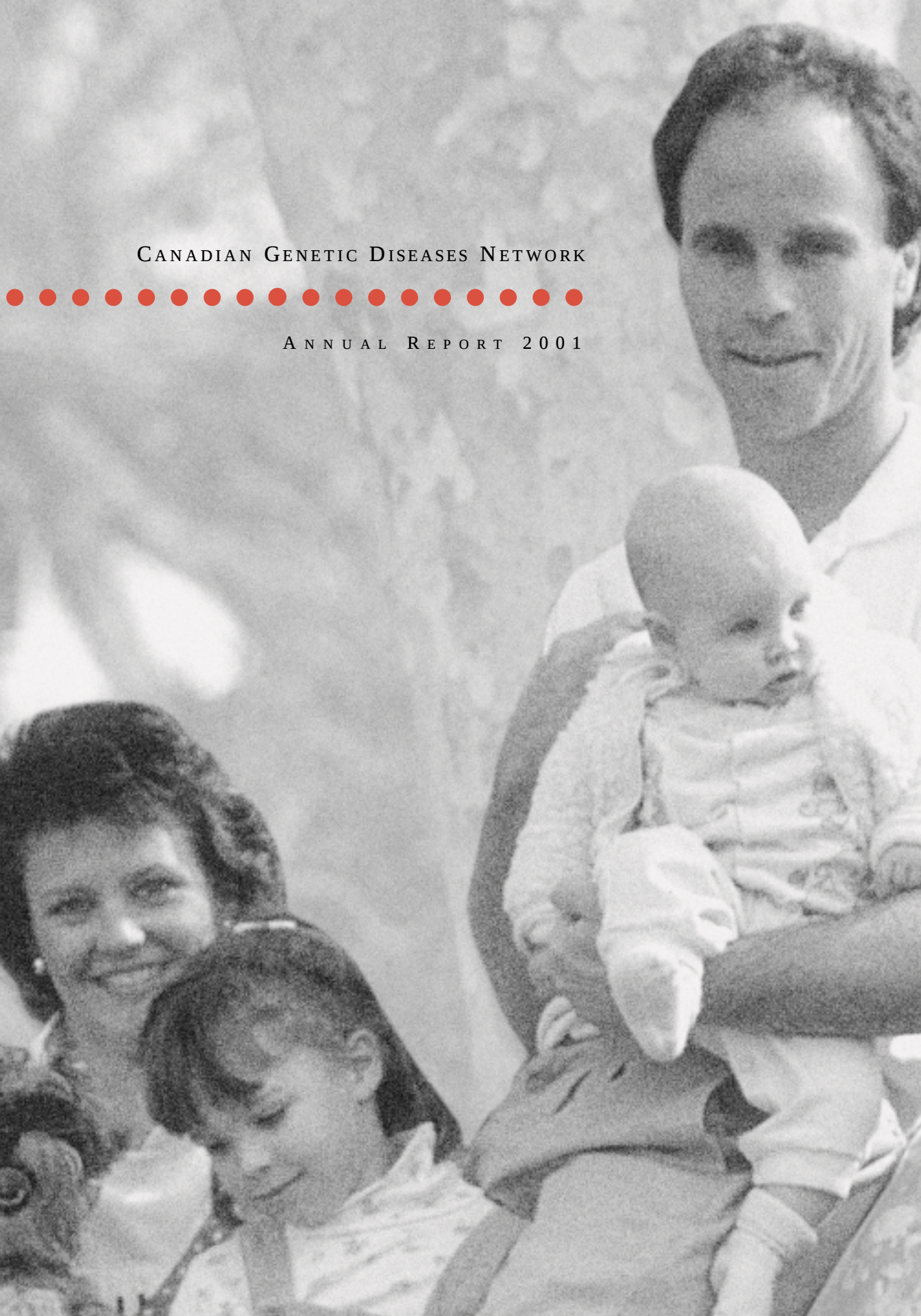

Canadian Genetic Diseases Network

Annual Report 2001

Members, Partners & Affiliates

Scientists & Institutions

John P. Robarts Research Institute, London
Dr. Robert Hegele

Hospital for Sick Children, Toronto
Dr. Jayne Danska
Dr. John Dick
Dr. Roderick McInnes
Dr. Christopher Pearson
Dr. Brian Robinson
Dr. Chaim Roifman
Dr. Johanna Rommens
Dr. Stephen Scherer
Dr. Lap-Chee-Tsui

Oxford University, U.K.
Dr. George Ebers

McGill University, Montreal
Dr. Philippe Gros
Montreal Children's Hospital Research Institute
Dr. Rima Rozen
Dr. Charles Scriver
Montreal General Hospital Research Institute
Dr. William Foulkes
Dr. Celia Greenwood
Dr. Tom Hudson
Dr. Ken Morgan
Dr. Guy Rouleau
Dr. Erwin Schurr
Dr. Emil Skamene

Mount Sinai Hospital, Toronto
Samuel Lunenfeld Research Institute
Dr. Keith Ashman
Dr. Joseph Culotti
Dr. Andras Nagy
Dr. Tony Pawson
Dr. Janet Rossant
Dr. Kathy Siminovitch

The Ottawa Hospital
Ottawa Health Research Institute
Dr. Dennis Bulman
Dr. Michael Rudnicki
Dr. Ronald Worton

Laval University, Quebec
Centre Hospitalier Universitaire de Québec:
Pavillon Saint- François d'Assise
Dr. Régen Drouin
Dr. François Rousseau

University of Alberta, Edmonton
Dr. Susan Andrew
Dr. Diane Cox
Dr. Moira Glerum
Dr. Bruce Rannala
Dr. Michael Walter
Dr. Rachel Wevrick

University of British Columbia, Vancouver
Dr. Lorne Clarke
Dr. Pieter Cullis
Dr. Leigh Field
Dr. Thom Grigliatti
Dr. Frank Tufaro
Centre for Molecular Medicine and Therapeutics
Dr. Michael Hayden
Dr. Phil Hieter
Mr. Francis Ouellette

University of Calgary
Dr. Roy Gravel
Dr. Frank Jirik

University of Manitoba, Winnipeg
Dr. Geoff Hicks
Dr. Barbara Triggs-Raine
Dr. John Wilkins

University of Montreal
Hôpital Sainte-Justine
Dr. Grant Mitchell
Dr. Daniel Sinnett

University of Ottawa
Children's Hospital of Eastern Ontario
Dr. Joh-E Ikeda
Dr. Robert Korneluk
Dr. Alex MacKenzie

University of Toronto
Banting & Best
Dr. James Friesen
Dr. Jack Greenblatt
Dr. David MacLennan
Centre for Research in Neurodegenerative Disease
Dr. Peter St George-Hyslop
Eye Research Institute
Dr. Elise Héon
Ontario Cancer Institute
Dr. Brenda Gallie
Dr. Jeremy Squire
Women's College Hospital
Dr. Steven Narod

University of Victoria
Dr. Benjamin Koop

University of Washington, Ore.
Dr. Norman Dovichi

Industrial Partners:

Abbott Strategies
Ægera Therapeutics
CGDN Ventures
Canadian Medical Discoveries Fund
Ecogenix
Ellipsis Biotherapeutics
Exella Ventures
Genexyn Pharmaceuticals
Hill & Knowlton
IBEX Technologies
GeneChem Management.
MediGene
Merck & Co. (MRL)
Merck Frosst Canada
Pfizer Canada
Rx&D
SignalGene
Solutions by Sequence
Xenon Genetics

Industrial Affiliates:

Bayer Corp.
Burroughs Wellcome
INEX Pharmaceuticals Corp.
Schering Canada
Sequella
Variagenics

Non-profit Partners:

Canadian Gene Cure Foundation
Centre for Molecular Medicine & Therapeutics
University of British Columbia

Non-profit Affiliates:

Armaurer Hansen Research Institute
Amsterdam Molecular Therapeutics
Andrew's Buddies
Association Français Contres les Myopathies
B.C. Research Institute for Children's and Women's Health
Canadian Breast Cancer Research Initiative
Canadian Cystic Fibrosis Foundation
Cancer Research Society
Canteon Canadian Research Fund
Families of Spinal Muscular Atrophy
Fonds pour la Formation de Chercheurs et l'Aide à la Recherche
Foundation for Fighting Blindness
Foundation for Gene and Cell Therapy
Glaucoma Research Society of Canada
Heart & Stroke Foundation of Canada
Heart & Stroke Foundation of Ontario
Hereditary Disease Foundation
Hospital for Sick Children, Blood & Gene Therapy Program
Howard Hughes Medical Research Institute
Huntington Society of Canada
Huntington Disease Society of America
Juvenile Diabetes Foundation International
Lloyd Carr-Harris Foundation
Lotte & John Hecht Memorial Fund
Macular Vision Research Foundation
Manitoba Centres of Excellence
Montreal General Hospital Research Institute
Muscular Dystrophy Association (USA)
National Cancer Institute of Canada
National Institutes of Health
Ottawa Hospital Research Institute
Restless Legs Syndrome Foundation
Terry Fox Foundation
Tori's Buddies

Government Affiliates:

Biotechnology Human Resource Council
Fonds de la recherches en santé du Québec
Human Resources Development Canada
Province of British Columbia
US Army

At the Canadian Genetic Diseases Network, we are catalysts.

Research and cures...we make them happen.

Mission

Our mission is to be the primary catalyst in advancing Canada's scientific and commercial competitiveness in genetic research and the application of genetic discoveries to the prevention, diagnosis and treatment of human disease.

Profile

The Canadian Genetic Diseases Network (CGDN) is a not-for-profit corporation. Our products are medically significant genetic discoveries.

Our services include:

- Catalysing partnerships that translate these discoveries into diagnostics, therapies and products that prevent, treat or cure disease;
- Training young scientists in human genetic disease research;
- Providing public information on the benefits and risks of research in human genetic disease.

Our partners are the scientists who create our product, their institutions which provide research facilities, companies who develop our discoveries, and all of us – the health care users of Canada.

CGDN scientists and their research teams are based in universities, hospitals, and research centres from Vancouver to Quebec City. CGDN's scientific program, training, and commercialization programs are co-ordinated through its offices in Vancouver and Ottawa.

As a catalyst, CGDN makes research and commercialization happen faster and better.

Letter to Stakeholders

2001 – a year of renewal for CGDN

Phase 3 mid-term review:

In the Spring of 2001, the Canadian Genetic Diseases Network (CGDN) underwent a funding review by the Networks of Centres of Excellence (NCE) program. The report of the international review panel will be complete in June and a decision by the NCE Steering committee is expected in September, 2001.

New mission statement:

The environment in which CGDN operates has changed significantly since its inception in 1990. New genomics/genetic agencies such as Genome Canada and the CIHR Institute of Genetics have been launched. The first draft of the Human Genome has been released. Against this backdrop, the CGDN Board recognized the importance of reviewing our mission statement. After significant consultation with stakeholders, the Board adopted the following new mission:

CGDN MISSION: to be the primary catalyst in advancing Canada's scientific and commercial competitiveness in genetic research and the application of genetic discoveries to the prevention, diagnosis and treatment of human disease.

Five key criteria for success:

The NCE program has identified five criteria which are used to measure the success of the networks. CGDN's key achievements in each of these areas are listed below:

Research excellence

In the reporting year, CGDN investigators published over 400 collaborative manuscripts in prestigious journals such as *Nature, Nature Genetics, Science, American Journal of Human Genetics, Lancet, Human Molecular Genetics.*

The following examples of these leading research developments are described in the section 'Scientific Discovery': leukemia – Dr. John Dick; breast cancer – Dr. François Rousseau; birth defects and cardiovascular disease – Drs. Rima Rozen, Michael Rudnicki; Alzheimer's disease – Dr. Peter St George-Hyslop; Down syndrome – Dr. Régen Drouin; ALS (Lou Gehrig's disease) – Drs. Joh-E Ikeda, Michael Hayden, Stephen Scherer, Guy Rouleau; congenital liver disease – Drs. Grant Mitchell, Tom Hudson, Ken Morgan; fat tissue degeneration & diabetes – Dr. Robert Hegele; glaucoma – Drs. Michael Walter, Ben Koop; immune-deficiency disease – Dr. Chaim Roifman.

Building Canada's research capacity

CGDN is committed to identifying emerging technologies and services that will keep its researchers at the leading edge of medical science. The convergence of biology, computer science and mathematics into the new discipline of bioinformatics has created exciting new technologies for genetic researchers. CGDN continues to lead The Canadian Bioinformatics Workshops (CBW) program which is training Canadians in the use of these resources. The program in 2000-2001 included a series of four workshops offered at locations across Canada: *Bioinformatics, Genomics, Proteomics, Developing the Tools.* The program will expand to five courses in 2001-2002.

In other capacity building initiatives, CGDN catalyzed the creation of a new $1 million MD/PhD Scholarships Program that is to be jointly sponsored by CGDN, the Canadian Gene Cure Foundation (CGCF) and the CIHR Institute of Genetics. This initiative will fund eight new MD/PhD candidates at universities across Canada. The shortage of MD/PhDs has been cited by researchers as a major impediment to the identification of the genetic components of disease.

Recruitment

CGDN believes that continuous renewal of its roster of scientists is key to maintaining its record of outstanding scientific research. In 2001, CGDN appointed four new principal investigators: working in diabetes – Dr. Jayne Danska; eye disease – Dr. Geoff Hicks; breast cancer – Dr. William Foulkes; proteomics core facility – Dr. Keith Ashman. In addition, CGDN accepted five new researchers into the successful Network Scholars program: Dr. Susan Andrew, Dr. Moira Glerum, Dr. Celia Greenwood, Dr. Christopher Pearson, and Dr. Bruce Rannala. The program is described in the section 'Capacity Building'.

Creation of value

The translation of discoveries into new products is an important part of the NCE and CGDN mandate. CGDN

The Rt. Hon.
Don Mazankowski, PC, OC
Chairman of the Board

Dr. Michael Hayden
Scientific Director

Dr. Ron Woznow
Chief Executive Officer

continues to work with its university and industry partners to protect and strengthen intellectual property which can then be licensed out or become the basis of a new biotechnology company. In 2000-2001 the CGDN Strategic Investment Fund provided $259,000 to develop intellectual property with commercial potential. Strategic project grants are described in the section 'Creating Value and Sustainability'.

The merger of Xenon Genetics Inc. of Vancouver and RGS Inc. of Montreal, both Network spin-off companies, has given rise to a world-class medical genetics company located in Canada. CGDN played an active role in the development of this merger. Xenon now has major research facilities in Montreal and Vancouver which have created over 100 new career opportunities for university graduates and attracted over $70 million in venture capital financing.

Sustainability

CGDN receives approximately 80% of its funding from the NCE program which operates under a 14-year funding rule. As a result, notwithstanding the Network's successes, CGDN will require alternative sources of funding post 2005. The Board and management of CGDN are committed to securing a funding base of $5 million per year post 2005 to ensure that collaborative medical genetics research remains a part of the Canadian research landscape.

One source of capital will be the CGDN endowment fund that was started in 1996. In 2000-2001, the fund increased in value from $3 million to $6.2 million largely due to the appreciation of the Xenon and RGS shareholdings.

Continuing our tradition of scientific leadership:

In 2001, Dr. Charles Scriver and Dr. Ron Worton retired as Associate Directors, positions they have held since 1990. The Board, management and members of CGDN commend both senior researchers for twelve years of exceptional service to this organization. Both Dr. Scriver and Dr. Worton remain with CGDN as principal investigators. New Associate Directors are Dr. Lap-Chee Tsui and Dr. Tom Hudson.

Looking ahead to 2002 and beyond:

The knowledge flowing from the human genome project will lead to major medical breakthroughs in the coming years. We are confident that CGDN will continue to play a significant role in these advancements through the discovery and translation of genetic knowledge.

Don Mazankowski, PC, OC
Chairman of the Board

Michael Hayden, MB, ChB, PhD, FRCP(C), FRSC
Scientific Director

Ron Woznow, PhD
Chief Executive Officer

Research Projects – From Genes to Therapies

CGDN investigators collaborate on integrated projects in four major theme areas designed to promote gene discovery, understand how disease is caused, apply the knowledge to develop therapies, and identify, prevent, or modify the impact of disease.

Gene Identification

Researchers

D. Cox, M. Walter (Edmonton); G. Ebers (Oxford, U.K.), R. Hegele (London); B. Triggs-Raine (Winnipeg); P. Gros, W. Foulkes, T. Hudson, K. Morgan, G. Rouleau, E. Skamene, E. Schurr (Montreal); F. Rousseau (Quebec); J. Danska, R. McInnes, B. Robinson, J. Rommens, S. Scherer, K. Siminovitch, P. St George-Hyslop, L-C. Tsui (Toronto); M. Hayden, L. Field (Vancouver)

Projects

Gastrointestinal diseases	Inflammatory bowel disease, liver disease
Diabetes	IDDM, NIDDM
Cardiovascular diseases	HDL deficiency, intracranial aneurysm
Neurological disorders	Dyslexia, familial dementia, Williams-Beuren syndrome
Bone & joint disorders	Rheumatoid arthritis, osteoporosis
Susceptibility to infection	Legionnaires' disease, CMV, malaria, salmonella, tuberculosis
Ocular diseases	Glaucoma, retinitis pigmentosa, developmental eye defects

Pathogenesis & Functional Genomics

Researchers

F. Jirik, R. Gravel (Calgary); J. Wilkins, G. Hicks (Winnipeg); T. Hudson, G. Mitchell, K. Morgan, P. Gros, R. Rozen (Montreal); A. MacKenzie, R. Korneluk (Ottawa); F. Rousseau, R. Drouin (Quebec); B. Gallie, D. MacLennan, B. Robinson, P. St George-Hyslop (Toronto); M. Hayden, P. Hieter (Vancouver)

Projects

Cancer	Retinoblastoma, folate metabolism and tumours
Cell & neuron death	Apoptosis, Alzheimer's disease, Huntington disease, fragile X syndrome, Tay-Sachs and Sandhoff diseases
Metabolic disorders	Respiratory chain defects, obesity
Neuromuscular disorders	Calcium regulation and muscle disease, myotonic dystrophy
Functional genomics	SAGE analysis, DNA arrays, bioinformatics of ES cell mutations

Genetic Therapies

Researchers

C. Scriver (Montreal); R. Worton (Ottawa); J. Dick, R. McInnes, C. Roifman, L-C. Tsui (Toronto); L. Clarke, P. Cullis, M. Hayden, F. Tufaro (Vancouver)

Projects

Technology development	Viral vectors: HSV, liposomes, stem cells
Applications	Murine tumour models, LPL deficiency, murine Hurler's syndrome, cystic fibrosis, Duchenne muscular dystrophy, human immunodeficiency diseases, retinal degeneration, enzyme substitution for phenylketonuria

Genetics & Health Care

Researchers

C. Scriver (Montreal); B. Gallie, D. MacLennan, S. Narod, L-C Tsui (Toronto)

Projects

Technology development	Databases
Mutations	Detection
Impact/Evaluation	Meta-analysis of treatment of hereditary diseases, retinoblastoma, malignant hyperthermia, breast and ovarian cancer

Core Technologies

Facilities & Directors

Genotyping	T. Hudson (Montreal)
DNA sequence analysis	M. Hayden (Vancouver), B. Koop (Victoria), S. Scherer (Toronto)
Bioinformatics & BIND database	F. Ouellette (Vancouver)
Transcribed sequence detection	J. Rommens (Toronto)
Genome alteration in mice	F. Jirik (Vancouver), A. Nagy, J. Rossant (Toronto)
Genome alterations in C. *elegans*	J. Culotti (Toronto)
In vivo DNA analysis	R. Drouin (Quebec)
Immunoprobes	J. Wilkins (Winnipeg)
Proteomics	K. Ashman (Toronto)

Scientific Discovery – We make it happen

60% of all Canadians will suffer from a genetic disease. CGDN's theme-based core research program is designed to understand the relationship between genes and genetic disease so that new treatments can be developed.

In the reporting year, CGDN scientists reported major discoveries in the following theme areas :

Identification of the genetic basis of human disease is a major strength of CGDN. Over the past four years alone, our scientists have identified or found the loci of 20 disease genes. In 2000-2001, the following discoveries were among our important findings.

ALS (Lou Gehrig's disease): identification of a gene which causes the juvenile form of familial amyotrophic lateral sclerosis (ALS). (J. Ikeda, University of Ottawa & Tokai University, Japan; M. Hayden, Centre for Molecular Medicine & Therapeutics, Vancouver; S. Scherer, Hospital for Sick Children, Toronto; G. Rouleau, McGill University, Montreal)

ALS is the most prevalent adult-onset neurological disorder after Alzheimer's and Parkinson's diseases, manifesting with selective loss of motor neurons in the brain and spinal cord. It is characterized by weakness, muscle wasting, and increased reflexes, producing problems in dexterity or gait resulting from muscle weakness. It is most commonly diagnosed in middle age and affects more men than women. Death commonly occurs within five years of diagnosis and is attributed to respiratory failure or physical wasting. The next step is to analyse the normal function of the gene through the use of animal models. *(Nature Genetics, October 2001)*

Breast cancer: identification of an androgen receptor coding gene which plays a significant role in women's risk of developing breast cancer. (F. Rousseau, Centre Hospitalier Universitaire de Québec, Quebec)

The androgen receptor coding gene (AR), along with other genes, is part of the genetic make-up of all human beings. The gene can present in different forms, called 'variants' which Dr. Rousseau and his team succeeded in identifying, specifically those variants which provide a lowered risk of developing sporadic or non-hereditary breast cancer in women. Approximately 15% of women carry a form of AR that is associated with a 50% decrease in their risk of developing breast cancer. Conversely, 85% of women present with a form of AR that doubles their susceptibility. The results provide a better understanding of sporadic breast cancers which represent 90% of all breast cancer cases. *(Cancer Research, August 2001)*

Congenital liver disease: localization of a recessive gene for North American Indian childhood cirrhosis. (G. Mitchell, Hôpital Sainte-Justine, Montreal; T. Hudson & K. Morgan, Montreal General Hospital Research Institute)

The disease is an inherited liver disorder characterized by early onset of cholestasis (failure of bile flow) found in Ojibway-Cree children in the Abitibi region of northwestern Quebec. Affected newborn children typically present with transient jaundice that progresses to obstruction of bile flow and eventual liver failure and liver transplantation in childhood or young adulthood. Clinical and physiological investigations to discover the underlying cause of the disease have been unsuccessful. The mapping of the locus is an important step towards understanding this frequent and potentially fatal disease among First Nations children in the region. *(American Journal of Human Genetics, July 2000)*

***Lipodystrophy (fat tissue degeneration) & diabetes: identification of a* gene mutation in Canadian families with Dunnigan-type familial partial lipodystrophy (FPLD). (R. Hegele, J.P. Robarts Research Institute, London)**

Patients with FPLD, a rare disease, are born with normal fat distribution, but after puberty experience progressive fat degeneration in extremities, trunk and the buttock region. Excess fat may become deposited within the face, neck, and back. The disease is almost always associated with profound insulin resistance and diabetes. Dr. Hegele found that this disease was due to mutations in the LMNA gene, which encodes a structural protein for the cellular nucleus. Carriers of the mutant gene were much more

prone to early heart disease requiring coronary bypass surgery. The linkage between defective nuclear structure and a metabolic disease such as diabetes creates a new area for investigation and development of therapeutic targets. This research was cited in the American Heart Association's Top Ten Research Advances for 2001. *(Human Molecular Genetics, January 2000; Circulation May 2001)*

Glaucoma: isolation of a gene from a screening process searching for genes implicated in eye disease. (M. Walter, University of Alberta, Edmonton; B. Koop, University of Victoria)

Glaucoma is a common vision-threatening disorder with only a few disease-causing genes currently identified. The discovery of specific genes will allow identification and treatment of high-risk individuals before they suffer vision loss. In the study, Dr. Walter and his colleagues took a novel approach, screening candidate genes, to identify those which may have an involvement in ocular disease. Genes identified as being highly or specifically expressed in a given tissue can be assumed to be important for the function of that tissue and can become candidate genes for disorders that affect the tissue. The study searched for genes that are highly expressed in human iris tissue and identified one gene (Oculoglycan/Opticin) which will be studied further to determine whether it is a candidate for ocular disease. *(Genomics, December 2000)*

Pathogenesis in genetics research is the understanding of how mutations in genes lead to disease. From this knowledge comes clinical and commercial opportunity for preventatives and therapies. At CGDN, we combine Pathogenesis with **Functional Genomics**, the use of cutting-edge technologies, to research the development of disease. The following are an example of CGDN findings in 2000-2001:

Birth defects & cardiovascular disease: generation of a mouse model with mutations of a gene important in altering risk for neurological and vascular diseases. (R. Rozen, Montreal Children's Hospital Research Institute; M. Rudnicki, McMaster University).

Dr. Rozen developed a mouse with a knockout of the MTHFR gene which plays a significant role in the metabolism of the vitamin folic acid. The resulting disruption results in elevation of an amino acid (homocysteine) which is associated with higher susceptibility to birth defects, pregnancy complications and cardiovascular disease. This work builds on Dr. Rozen's earlier cloning of the MTHFR gene and identification of a mutation in the gene associated with increased risk for the above disorders in human populations. A role for the MTHFR gene in colon cancer and psychiatric disorders has also been proposed. The availability of the mouse model allows scientists to study the mechanisms that contribute to the diverse group of disorders affected by folate metabolism and, more importantly, to facilitate treatment or even prevention of the disease. *(Human Molecular Genetics, March 2001)*

Alzheimer's disease: Novel regulated intramembranous protein cleavage complex. (P. St George-Hyslop, University of Toronto)

Building on his discovery of two genes for Alzheimer's disease in 1995, Dr. St George-Hyslop is investigating how these genes function to cause the disease. He has found that the presenilins form high molecular weight protein complexes which also contain nicastrin, a type 1 transmembrane glycoprotein [±]. Together these proteins regulate the cleavage of APP (involved in Alzheimer Disease) as well as Notch (involved in dorsal axis development in both vertebrate and invertebrates) and ErbB4 (involved in oncogenesis)[+]. Analysis of these proteins will provide new insight not only into the pathogenesis of Alzheimer's Disease, but also insights into a novel mechanism of protein processing that has a major role in fundamental physiological events such as signal transduction during embryogenesis and oncogensis. The former will facilitate the creation of rational therapeutics for Alzheimer's, the latter may lead to insights into birth defects and cancer respectively. [±] *(Nature, September 2000);* [+]*(Nature Cell Biology, August 2001).*

Alzheimer's disease: Reduction of behavioural impairment and destruction of cells in a mouse model of the disease. (P. St George-Hyslop, University of Toronto)

Using a transgenic mouse model of Alzheimer's disease, Dr. St George-Hyslop and his team worked with evidence that abnormal processing and extracellular deposition of amyloid- ß peptide is central to the pathogen-

esis of Alzheimer's. They showed that mice immunized with the Aß peptide manifested a reduction both of the cognitive dysfunction and the cerebral deposition of fibrillar Aß as amyloid plaques. Studies will continue to determine how the findings fully explain reduced loss of cognition. *(Nature, December 2000)*

Genetic Therapies is a project theme where CGDN capitalizes on recent advances and technologies which can lead to developing and evaluating gene-based therapeutics and conducting clinical trials. In many cases effective cures do not exist for inherited disorders, thus CGDN's work on genetic therapies has the potential for substantially improving quality of life and contributing to the efficient use of health care resources.

Down syndrome: identification of the number of fetal cells present in maternal blood during normal fetal development. (R. Drouin, Hôpital Saint-François d'Assise, Quebec)

Down syndrome is the most frequently occurring chromosomal abnormality with a frequency of 1 in 700 births. Although the incidence is high in offspring of women over 35, 75% of affected children are born to younger mothers. Down syndrome offspring have mildly reduced life expectancy but are subject to a number of developmental disabilities and medical complications. Prenatal diagnosis presently requires invasive and costly procedures which can lead to loss of pregnancy. Dr. Drouin's findings lay the groundwork for a non-invasive test. *(Journal of Clinical Genetics, August 2001)*

Gene therapy: discovery of human stem cells that differ in proliferative and self-renewal potential. (J. Dick, Hospital for Sick Children)

Stem cells make up one in a million bone marrow cells and are the cells from which the blood system grows. Dr. Dick found that distinct types of stem cells exist within the blood system that differ in the length of time they can sustain a stem cell transplant. Stem cell transplants, a form of bone marrow transplant, are used to treat cancers, anemia and auto-immune disorders and most applications of stem cells require that they function for many years following transplantation. Therefore, the long-term repopulating stem cells would be the ones researchers would target when permanent replacement is important, for example in the development of new treatments such as gene therapy and stem cell expansion. The findings have important clinical implications. *(Nature Immunology, January 2001)*

SCID disease (Severe Combined Immune-Deficiency disease): generation and characterization of purine nucleoside phosphorylase (PNP) knockout mouse as a model for human SCID disease. (C. Roifman, Hospital for Sick Children)

SCID is a fatal immune-deficiency disease in which effective treatment (matched bone marrow transplantation) is available only to a minority of patients. The generation of a SCID animal model allows researchers to develop both gene-based and protein-based therapies for human immune-deficiencies. In his study, Dr. Roifman generated a PNP deficient mouse and characterized its cellular and biochemical phenotype, revealing the similarities to the human disease and establishing it suitability as an excellent animal model for gene therapy for SCID. *(Journal of Experimental Medicine, June 2000)*

Genetics and Health Care research projects apply mutation identification strategies to identify, prevent, or modify the impact of specific diseases. Creation and linkage of large databases are essential tools in this process, along with development of sensitive and rapid technologies for DNA testing for specific diseases.

Breast cancer: finding that Tamoxifen use reduces the risk of contralateral breast cancer in women with pathogenic mutations in the BRCA1 or BRCA2 gene. (S. Narod, University of Toronto)

Women with a mutation in BRCA1 or BRCA2 genes have a high risk of developing breast cancer or of contralateral cancer after the initial diagnosis of the disease. In these families, the lifetime risk of breast cancer is estimated to be as high as 80%. In the ten years after diagnosis of breast cancer in these patients, the risk of contralateral breast cancer is about 35%. In his investigation, Dr. Narod studied women with bilateral hereditary breast cancer and age-matched controls with unilateral hereditary breast cancer. He found that in women who used tamoxifen for 2-4 years, the risk of contralateral breast cancer was reduced by 75%. *(Lancet, December 2000)*

Honour Roll: Recognition of Excellence in Research

In 2000/2001 CGDN scientists and their teams received top Canadian and international awards for science excellence.

Awards received by senior researchers

Academy of Sciences of the Czech Republic: G.J. Mendel Honorary Medal for Outstanding Achievements in the Biological Sciences
Emil Skamene, McGill U.

Alberta Heritage Foundation for Medical Research: Research Prize, Senior Scientist Scholarship
Michael Walter, U. Alberta

ACFAS: Prix Léo-Pariseau
Rima Rozen, McGill U.

Alec Bangham
Lifetime Achievement Award
Pieter Cullis, UBC

American Association of Physicians: Fellow
Emil Skamene, McGill U.

American Society for Clinical Investigation: Elected Member
Robert Hegele, J.P. Robarts Inst.

BCBA: Vision and Leadership Award
Michael Hayden, UBC

BCRI for Children's & Women's Health: Outstanding Achievement for an Investigator Award
Michael Hayden, UBC

Burroughs-Wellcome: Visiting Professorship in the Basic Sciences 2001
Stephen Scherer, HSC

Canada Chair (Senior Tier) in Nutrition and Metabolism
Brian Robinson, HSC

Canada Research Chair in Human Genetics
Robert Hegele, J.P. Robarts Inst.

Canada Research Chair in Medical Genetics
Michael Hayden, UBC

Canadian Institutes of Health Research Distinguised Scientist Award:
Lap-Chee Tsui, HSC
CIHR Scientist Award:
Phillip Hieter, UBC

Canadian Pacific Research Award
Tom Hudson, McGill U.

Genetics Society of Canada: Award of Excellence
Michael Hayden, UBC

Government of Ontario: Premier's Research Excellence Award
Johanna Rommens, HSC

Institute for Cancer Research (UK): Visiting Haddow Professorship
John Dick, HSC

Institute of Physical & Chemical Research (Japan): Eminent Scientist
Lap-Chee Tsui, HSC

International Society of Heart Research: Elected Founding Fellow
David MacLennan, Banting & Best

Irish Ophthalmological Society: The Mooney Lectureship
Brenda Gallie, U. Toronto

Lee Kuan Yew Distinguished Professor (Singapore)
Lap-Chee Tsui, HSC

McGill University
Dr. Phil Gold Fellowship:
Erwin Schurr, McGill U.
James McGill Professorship:
Rima Rozen, McGill U.
William Dawson Scholar:
Tom Hudson, McGill U.

Michael Smith Award 2000
Guy Rouleau, McGill U.

NSERC:
E.W.R. Steacie Memorial Fellowship
Ben Koop, U. Victoria

Order of Ontario
Lap-Chee Tsui, HSC

Prix du Québec
Emil Skamene, McGill U.

UBC Faculty of Medicine:
Jubilee Medal on the 50th Anniversary
Michael Hayden, UBC

Quebec-Sciences & Radio-Canada:
Quebec Scientist of the Year (2000)
Tom Hudson, McGill U.

Royal Society of London: Glaxo Wellcome Prize, Gold Medal and Lecture
David MacLennan, Banting & Best

University of Windsor:
2001 Honorary Degree
Stephen Scherer, HSC

Awards received by research team members

Alberta Heritage Foundation for Medical Research
Graduate Studentship:
Gloria His, U. Alberta
PhD studentship:
Marcia Campbell, U. Alberta
Post-doctoral fellowship:
Monica Narang, U. Calgary
Research Incentive Award:
Tracey Petryshen, U. Calgary
Summer Studentship:
Matthew Chen, Jai Shah, Jamie Steckley – U. Alberta

BC Science Council: GREAT BC award
C. Smith, U. Victoria

CGDN Summer Studentship:
Andrew Carson, Ashley Cox, Katharine Hagerman, Mariana Kekis, Ella Korets, Debbie Luk – HSC; Sabine Koszegi, Ariana Murata – McGill U.; Christine Mancusco, Mt. Sinai Hosp; Catherine Tong, Toronto Hosp.; Thea Chibuk, Ron Clarke, Karmon Helmie – U. Alberta; David He, Caroline Piggott – UBC; Anca Petrescu, Evan Roll – U. Calgary; Jay Hochman, Lisa Krupa, Dianna Martin – U. Manitoba.

CIHR: Doctoral Studentship
Sahar Sibani, McGill U.

Canadian Liver Foundation:
Graduate Studentship
Steve Moore

Glaxo-Wellcome: Post-doctoral fellowship
Yongqin Xu, U. Calgary

HSC Research Institute:
HSC Restracom Studentship
Ray Oh, Graeme Boocock – HSC

Heart and Stroke Foundation of Ontario
Martin Wills Award:
Kursten Wolfe, J.P. Robarts Inst.
John D. Schultz Award:
Rebecca Pollex, J.P. Robarts Inst.

Lipton / Unilever Award in Neuroscience
David Diciommo, U. Toronto

McGill University
Brigadier General Herbert Stanley Birkett Memorial Research Award:
Celia Greenwood, McGill U.
Faculty of Medicine Studentship:
Pamela Tran, McGill U.
MCHRI Fellowship:
Bernd Schwahn, McGill U.
MCHRI Studentship:
Jaspreet Sekhon, Zhoutao Chen, Pamela Tran – McGill U.

MS Society of Canada: Studentship
Dave Dyment, LHSC

NSERC
Postgraduate Scholarship:
Tracey Petryshen, U. Calgary
Summer Studentship:
Jai Shah, U. Alberta

National Institute of Mental Health (USA): Travel Scholarship
Celia Greenwood, McGill U.

USA National Student Research Forum:
First Prize, Poster Presentation
David Diciommo, U. Toronto

University of Alberta
75th Anniversary Graduate Award:
M. Sharp, K. Kozlowski – U. Alberta
Gordon Research Conference
Poster Award:
J. Friedman, U. Alberta
Department of Ophthalmology
Alcon Travel Award:
J. Friedman, K. Kozlowski – U. Alberta
Medical Sciences Graduate Award:
J. Friedman, U. Alberta

University of Toronto
George Brown Memorial Award, MD/PhD Division and Princess Margaret Foundation Award:
David Diciommo, U. Toronto
Gordon Cressy Leadership Award:
Celia Greenwood, McGill U.
Open Studentship:
Mark Van Oene, HSC

Vision Science Research Program
Graduate Award
David Diciommo, U. Toronto

Creating Value & Sustainability – We make it happen

Our commercialization program catalyses start-up and growth of companies that create jobs and new health services.

CGDN has a successful record in funding early-stage research with commercial potential and transforming discoveries into new biotechnology companies or licencing agreements. Revenues from CGDN's commercialization program will be used to fund genetic disease research beyond 2005.

CGDN's management team works closely with principal investigators and their host institutions to identify commercially important discoveries, conduct proof-of-principle, and substantiate, file, and maintain patent claims.

The cost of doing this work is covered by grants from CGDN's *Strategic Funding Initiative*. Since 1995 CGDN has awarded a total of $1.4 million in strategic grants.

In 2000-2001 CGDN awarded investigators $259,000 in strategic grants for the following projects:

Table 1

Investigator	Award	Project
Dr. Daniel Sinnett Hôpital Ste-Justine, Montreal	$50,000	Gene susceptibility to disease: DNA polymorphisms
Dr. Brenda Gallie Ontario Cancer Institute	$50,000	Retinoblastoma testing (childhood eye tumors)
Dr. Charles Scriver McGill University	$42,000	Phenylketonuria (inborn error of metabolism)
Dr. Thom Grigliatti University of British Columbia	$66,560	Gene therapy : prevention of gene silencing
Dr. Stephen Scherer Hospital for Sick Children	$50,000	Genes in autism

"CGDN's strategic fund was of great assistance in funding the proof- of- principle required for my osteoporosis patents which were part of the basis for SignalGene's new business plan." François Rousseau, Laval University.

Catalysing growth of start-up companies:

One of the challenges for Canadian biotechnology companies is to raise enough venture capital to allow them to be competitive. In 2000-2001, CGDN catalysed the growth of four Canadian biotechnology companies (Xenon, RGS, SignalGene, Ecogenix) which raised a total of over $87 million.

Xenon & RGS

In 2000, CGDN supported the Vancouver based Xenon Genetics Inc. in its successful bid to acquire RGS Genome Inc., both network spin-off companies. The merger combines the strength of each company's research platform and builds on research initiatives and inter-network collaborations supported by CGDN since 1990. The resulting world-class clinical genomics company is now a world leader in clinical genetics. After this successful merger, Xenon completed a private placement financing of $74 million, one of the largest private placements of a Canadian biotechnology company. These funds allowed Xenon to expand laboratory facilities in Vancouver and Montreal.

"Our scientific and commercial partnerships with CGDN have played an important role in Xenon's rapid growth. We look forward to continuing these relationships." Frank Holler, CEO, Xenon.

SignalGene & Ecogenix

Also in 2000, CGDN participated in the partnering of Montreal-based spin-off companies, SignalGene Inc. and Ecogenix Inc., to identify genes involved in drug metabolism. This partnership facilitated the raising of $13 million by SignalGene.

"CGDN's expertise in commercialization of genetic patents played an important part in the development of SignalGene and Ecogenix." Bernard Coupal, President, T^2C^2.

Progress towards sustainability:

CGDN's collaborative discovery research, training and commercialization program requires a minimum operational budget of $5 million per year. At the end of Phase 3 NCE funding in 2005, CGDN anticipates generating $5 million per year from the following sources: $2 million in royalties, management fees, corporate sponsorship, endowment interest (see Table 2 below), and $3 million from new federal funding (e.g. an expanded NCE program).

In 2001, the CGDN endowment fund was valued at $6.2 million based on equity in public and private spin-off companies.

Table 2

Company	Status	No. Shares	Market value ($ million)
SignalGene	Public	800,000	1.8
MediGene	Public	8,490	0.5
Xenon Genetics	Private	293,329	3.4
Aegera	Private	271,952	0.5
		Total	6.2

Currently, the NCE provides funding for a maximum of 14 years regardless of the success of individual networks. This year, CGDN helped develop a consensus among the Board Chairs of Networks of Centres of Excellence that the 14-year NCE funding rule be changed. A proposal will be presented to Mr. Tom Bruzkowski, Chair of the NCE Steering Committee, at the October 2001 meeting of the NCE Chairs.

Capacity Building – We make it happen

CGDN maintains its competitive edge through attracting new investigators, mentoring, and peer review. CGDN's scientists are drawn from Canada's top investigators and trainees. Research projects and core technology facilities are peer-reviewed annually to maintain a record of scientific excellence.

New principal investigators:

Following peer-review in the Spring of 2001, the CGDN Board of Directors approved the appointment of three new principal investigators: Dr. Jayne Danska at Toronto's Hospital for Sick Children (project: diabetes Type 1), Dr. Geoff Hicks at the University of Manitoba (project: eye disease), and Dr. William Foulkes at Montreal General Hospital Research Institute (project: breast cancer).

Core Facilities:

Recognizing the strategic importance of providing CGDN scientists with cutting-edge technologies, the Board also approved a new proteomics core facility, directed by Dr. Keith Ashman at the Samuel Lunenfeld Research Institute in Toronto. The facility will assist investigators in identifying proteins and how they interact.

Network scholars:

CGDN's scholars program provides an opportunity for young scientists to collaborate with senior investigators. With the exception of the core research funding, Scholars have access to CGDN support through Strategic Funds, core facilities, and the annual scientific meeting. The table below lists the current scholars with those added in 2000-2001 marked with an asterisk.

CGDN Scholars (* New scholar in 2001)

Scholar	Affiliation	Research interest
Dr. Susan Andrew*	University of Alberta	Genomic instability in genetic disease
Dr. Dennis Bulman	Ottawa Hospital Research Institute	Genetic factors in neurological disorders
Dr. Moira Glerum*	University of Alberta	Defects in mitochondrial biogenesis
Dr. Celia Greenwood*	Montreal General Hospital	Statistical analyses of genetic diseases
Dr. Elise Héon	Toronto Eye Research Institute	Molecular genetic identification of inherited eye disorders
Dr. Christopher Pearson*	Toronto Hospital for Sick Children	Genomic instability in neurodegeneration
Dr. Bruce Rannala*	University of Alberta	Mapping of genes influencing complex disease
Dr. Daniel Sinnett	Hôpital Ste-Justine	Gene susceptibility & polymorphorisms in DNA
Dr. Rachel Wevrick	University of Alberta	Prader-Willi Syndrome

Expansion of Canadian Bioinformatics Workshops (CBW):

CGDN catalysed the CBW pilot certificate program in 1999 in partnership with the Biotechnology Human Resource Council (BHRC) and the Sectoral Partnerships Program of Human Resources Development Canada. The workshops address Canada's growing shortfall of scientists, in academia and industry, who have the skills required to develop and use bioinformatics software. CGDN manages the CBW program and recruits CBW faculty members from its principal investigators and core facility directors.

In 2000-2001, the CBW program received a combined grant of over one-half million dollars from BHRC and the Burroughs Wellcome Fund for expansion of the workshop series. The following four courses were held: 'Bioinformatics' (Calgary), 'Proteomics' (Edmonton), 'Developing the Tools' (Fredericton) and 'Genomics' (Montreal). Bursaries were made available for students. The workshops trained 189 qualifying students. Enrolment increased by almost 20% over 1999-2000 while maintaining high course satisfaction by students. Since inception of the CBW program, 55 students have completed the Certificate in Bioinformatics which requires successful completion of three courses. More information on CBW is found at www.bioinformatics.ca.

"As a CGDN investigator and student at the Bioinformatics and Genomics workshops, I am very proud of the leadership role CGDN has taken in teaching bioinformatics across Canada. We've had the opportunity to attend a truly cross-disciplinary training program that attracted biologists and computer scientists from academia and industry alike. Some of the students have already gone on to lead the development of bioinformatics within their own universities and companies. These are exciting times for science and the Bioinformatics Workshops are helping make Canada a full participant." Roy Gravel, University of Calgary.

Biomolecular Interaction Network Database (BIND):

In June 2001, CGDN was a partner in developing BIND which is designed to store all known and publicly available data on how proteins interact in humans. Francis Ouellette, CGDN's bioinformatics core facility director, has played a key role in nurturing BIND and demonstrating how BIND will allow CGDN scientists to better understand the relationship among genes, proteins and disease. More information on BIND and its host not-for-profit company, Blueprint Worldwide Inc., is found at www.blueprint.org.

New MD/PhD Scholarships program:

In 2001, CGDN brokered a joint agreement with the Canadian Gene Cure Foundation (CGCF) and the Institute of Genetics of the Canadian Institutes of Health Research to fund a new $1 million MD/PhD scholarships program. The program, which will be launched in 2002, will provide eight scholarships, each valued at $20,000 per year for six years. To be eligible, students must be enrolled in a combined MD/PhD training program at Canadian universities. The scholarships provide new money to support graduate research in medical genetics, genetic-related diseases, bioinformatics, bioethics of medical genetics and population genetics.

Studentships, Fellowships, Mentoring:

In 2000-2001, CGDN continued a joint Studentship/Fellowships Program in partnership with the Hospital for Sick Children, Huntington Society of Canada, Children's Hospital of Eastern Ontario, Mt. Sinai Hospital, Arthritis Society, and BC Research Institute for Children's and Women's Health. The program provides new money to train graduate students and post-doctoral fellows. The annual CGDN Summer Studentship Program provided 20 science undergraduates across the country with three months' experience and employment in a CGDN laboratory. A majority of these students go on to do graduate work or study medicine. Additionally, CGDN sponsored its Annual Scientific Meeting where 100 CGDN graduate and post-doctoral students met with 50 of CGDN's senior scientists.

"The summer project allowed me to gain experience in genetics, molecular biology, and bioinformatics (in the Department of Genetics and Genomic Biology with Dr. Stephen Scherer at Toronto's Hospital for Sick Children). This allowed me to develop as a scientist and helped prepare me for a career as a scientific researcher." Andrew Carson, 2001 Summer Student.

Financial Statements

The Auditor's Report, statement of financial position, statement of operations, and notes to financial statements are included below. In 2000-2001 the financial statements for CGDN did not include the financials for CGDN Ventures Inc., a wholly owned subsidiary and, therefore, represented non-consolidated statements. In the opinion of its auditors, this was not materially significant for CGDN financial statements.

In 2000-2001, CGDN wrote down part of the value ($77,135) of its loan to CGDN Ventures Inc. (see Note 4 to the Financial Statements). This write-down reflects the anticipated wind down of Exella Ventures Inc., a seed venture company owned 33 1/3% by CGDN Ventures Inc.

AUDITOR'S REPORT

To the Members of
Canadian Genetic Diseases Network

We have audited the statement of financial position of Canadian Genetic Diseases Network as at March 31, 2001 and the statements of operations, changes in net assets and cash flows for the year then ended. These financial statements are the responsibility of the company's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

As described in note 2(a), these financial statements are prepared on a non-consolidated basis.

In our opinion, except for the departure from Canadian generally accepted accounting principles described in the preceding paragraph, these financial statements present fairly, in all material respects, the financial position of the company as at March 31, 2001 and the results of its operations, changes in net assets and cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

COLLINS BARROW
CHARTERED ACCOUNTANTS
Vancouver, Canada
July 3, 2001

Statement of Financial Position
Year-end March 31, 2001

	2001 $	2000 (unaudited) $
ASSETS		
Current assets		
Cash and term deposits	1,364,716	464,694
Accounts receivable	398,709	6,686
Prepaid expenses	38,425	—
Due from research institutions (note 3)	563,422	245,133
Due from administrator (note 3)	—	713,058
	2,365,272	1,429,571
Investment in subsidiary (note 4)	22,866	51,402
Capital assets (note 5)	25,212	18,377
	2,413,350	1,499,350
LIABILITIES		
Current liabilities		
Accounts payable and accrued liabilities	93,018	4,000
Deferred contributions (note 6)	1,289,831	878,075
	1,382,849	882,075
CAPITAL		
Invested in capital assets	25,212	18,377
Unrestricted net assets	1,005,289	598,898
	1,030,501	617,275
	2,413,350	1,499,350

Statement of Operations
Year-end March 31, 2001

	2001 $	2000 (unaudited) $
Revenue		
Federal government grants (note 8(b))	4,252,326	4,668,271
Provincial government grants	90,000	241,000
Registration workshop fees - Bioinformatics	185,708	99,100
Industry/Foundations – Bioinformatics	113,287	80,584
Cost recoveries and other	264,223	89,543
	4,905,544	5,178,498
Expenditures		
Amortization	14,712	8,712
Bioinformatics workshops	302,874	289,055
Commercial research	306,122	623,046
Core research	3,229,774	3,145,510
Administration and general	425,075	468,314
Research training	136,626	306,259
Start-up funding	—	44,840
	4,415,183	4,885,736
Excess of operating revenue over expenditures for the year	490,361	292,762
Equity in loss of subsidiary (note 4)	(77,135)	—
Gain on sale of investments (note 8(c))	—	300,000
Net excess of revenue over expenditures for the year	413,226	592,762
Net assets, beginning of the year	617,275	24,513
Net assets, end of the year	1,030,501	617,275

Approved by the Directors

Ron Woznow
Director

Robert Heft
Director

Financial Statements

Notes to the Financial Statements
Year-end March 31, 2001

1. Nature of activities

Canadian Genetic Diseases Network ("CGDN") is a not-for-profit corporation incorporated on March 3, 1998 under the Canada Corporations Act. The net assets and excess of revenue over expenditures of the corporation are not available for the personal benefit of any member.

The federal government of Canada has selected CGDN to receive core funding under its Networks of Centres of Excellence Program ("NCE") and has charged the Canadian Institutes of Health Research (formerly The Medical Research Council) with administrative responsibility for overseeing CGDN. The Canadian Institute of Health Research, CGDN, and the University of British Columbia ("UBC") have entered into a Funding Agreement dated April 1, 1998 which outlines the terms and conditions pursuant to which the CGDN is to receive core funding of $4,500,000 during each of fiscal 1999, 2000, 2001 and 2002.

Under the Funding Agreement, UBC agreed to provide suitable space and facilities. UBC receives an annual grant from the Province of British Columbia to offset the cost of services provided to the NCE at the University of British. In addition, in fiscal 2000, UBC administered the distribution of the grant funds to eligible participating institutions as directed by CGDN. In fiscal 2001, CGDN administered the distribution of grant funds directly.

The New Mission Statement of the Canadian Genetic Diseases Network is:

To be the primary catalyst in advancing Canada's scientific and commercial competitiveness in genetic research, and the application of genetic discoveries to the prevention, diagnosis and treatment of human disease.

In support of its mission, CGDN will:

- Provide, and continually improve, a framework that supports a network of world-class genetic researchers.
- Develop appropriate intellectual property relationships with strategic partners to facilitate the translation of research into therapeutics and diagnostics.
- Identify appropriate business options to translate genetic research into therapeutics and diagnostics.
- Align with and support organizations that provide Canadians with access to educational opportunities and information on gene-based medicines.
- Provide appropriate training opportunities to continually enrich the network of researchers.
- Identify and develop international relationships that support the mission of CGDN.
- Improve network researchers' understanding of entrepreneurial opportunities arising from genetic research.

The Biotechnology Human Resource Council ("BHRC") has selected CGDN to assist in the development and management of the Building Bioinformatics Capabilities Project. BHRC and CGDN have entered into a contract dated December 29, 2000 which outlines the terms and conditions pursuant to which CGDN is to receive a total of $403,570 during the period from January 1, 2001 to March 31, 2002. For the period April 1, 2001 to March 31, 2004, BHRC will be entitled to receive 10% of any net profit derived by CGDN from the delivery or sale of any bioinformatics training products and services.

2. Significant accounting policies

a) Subsidiary

The company's investment in CGDN Ventures Inc., a wholly owned subsidiary, is accounted for by the equity method. Generally accepted accounting principles normally require that financial statements prepared for issuance to members be prepared on a consolidated basis. However, in this case, the directors are of the view that the consolidation of the company's profit-oriented subsidiary provides limited additional information.

b) Capital assets

Capital assets are recorded at cost. Amortization is provided on a straight-line basis over the assets' estimated useful lives, which for furniture and equipment is five years and for computer equipment is three years.

c) Revenue recognition

CGDN follows the deferral method of accounting for contributions. Restricted contributions including federal grant revenue received under the NCE and BHRC programs are recognized as revenue in the year in which the related expenditures are incurred. Unrestricted contributions are recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured. Endowment contributions are recognized as direct increases in net assets. The benefit of donated services is not recognized in the financial statements.

d) Deferred salary leave plan

The statement of financial position does not include amounts held by CGDN in trust for a director pursuant to a deferred salary leave plan.

3. Due from research institutions

The amount due from research institutions represents the balance of unexpended NCE government grants on hand as at March 31, 2001. These funds are committed to various research projects and will be expended in fiscal 2002.

The amount due from administrator as at March 31, 2000 represents the unexpended funds held by UBC as administrator for CGDN during fiscal 2000.

4. Investment in subsidiary

The investment in CGDN Ventures Inc. is comprised of:

	2001 $	2000 (unaudited) $
Shares, at cost	1	1
Advances, without interest	—	51,401
Note receivable, due on demand, interest at bank prime plus 2% per annum from March 15, 2001	100,000	—
Equity in loss	(77,135)	—
	22,866	51,402

The subsidiary's operating loss includes a write-down of its investment in Exella Ventures Inc. (33-1/3% owned). As at March 31, 2001, the shareholder's equity of the subsidiary amounts to $22,866.

Notes to the Financial Statements
Year-end March 31, 2001

5. Capital assets

	2001			2000 (unaudited)
	Cost $	Accumulated Amortization $	Net Book Value $	Net Book Value $
Computer equipment	37,387	20,699	16,688	16,474
Furniture and equipment	11,249	2,725	8,524	1,903
	48,636	23,424	25,212	18,377

6. Deferred contributions

Deferred contributions represent unspent funding from NCE, and Burroughs Wellcome Fund. The deferred contributions are committed to research and training projects in fiscal 2002.

	2001 $	2000 (unaudited) $
NCE – see note 8(b)	1,287,089	816,636
Burroughs Wellcome Fund	2,742	61,439
	1,289,831	878,075

7. Economic dependence and related party transactions

As described in note 1, CGDN receives substantially all of its funding from NCE and BHRC.

Under the Funding Agreement, UBC agreed to provide suitable space and facilities. UBC receives an annual grant from the Province of British Columbia to offset the cost of services provided to the NCE at the University of British Columbia.

Substantially all of the core research and research training expenditures are paid to eligible participating research institutions, including UBC, who are members of the corporation in their capacity as researchers.

CGDN acts as a nominee and agent on behalf of the Canadian Gene Cure Foundation ("Foundation"), a registered charitable organization, in connection with certain investments. Substantially, all of any share investments or other rights received are held in an endowment fund administered by the Canadian Gene Cure Foundation. The entities are related due to certain directors being common to both. During the year-end March 31, 2001, CGDN did not receive any fees from the Foundation (2000 – received fees of $15,000).

8. Other information

a) Financial instruments

The carrying amounts of CGDN's financial instruments approximate fair value due to their short maturities. CGDN is not exposed to credit or interest rate risks.

b) Federal government grant revenue

	2001 $	2000 (unaudited) $
NCE funds	4,500,000	4,500,000
BHRC funds	222,779	190,000
	4,722,779	4,690,000
Add: Deferred contributions recognized as revenue in the year		
BHRC	—	17,848
NCE	816,636	777,059
Less: Deferred contributions, end of the year		
NCE	(1,287,089)	(816,636)
	4,252,326	4,668,271

c) Gain on sale of investments

In fiscal 2000, CGDN received certain share investments as consideration for research funding and commercial guidance provided. All of the share investments were sold for a gain of $300,000.

d) Comparative figures

The comparative figures were unaudited and have been reclassified, where applicable, to conform with the presentation used in the current year.

Board and Members

Board of Directors:

Chairman of the Board:
The Rt. Hon. Don Mazankowski, PC, OC
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Abbott Strategies, Vancouver, B.C.

Mr. David Arkowitz
Controller, MRL
Merck & Co., Rahway, N.J.

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University of Washington, Seattle, Wa.

Mr. Richard Glickman
Sidney, B.C.

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Dr. Michael Hayden
Scientific Director
Canadian Genetic Diseases Network, Vancouver, B.C.

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Tsawwassen, B.C.

Dr. Heather Munroe-Blum
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University of Toronto, Ont.

Dr. Martha Piper
President
University of British Columbia, Vancouver, B.C.

Dr. Calvin Stiller
Chairman & Chief Executive Officer
Canadian Medical Discoveries Fund
London, Ont.

Dr. Ronald Worton
Associate Scientific Director
Canadian Genetic Diseases Network, Ottawa, Ont.

Board Committees:

Executive Committee
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Dr. Michael Hayden
Mr. Richard Glickman
Dr. Ron Woznow

Finance Committee
Mr. David Arkowitz *(Chair)*
Mr. Rob Abbott
The Rt. Hon. Don Mazankowski

Audit Committee
Dr. Robert Heft *(Chair)*
Dr. Heather Munroe-Blum
The Rt. Hon. Don Mazankowski

Officers:

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President & Scientific Director
Professor of Medical Genetics
University of British Columbia, Vancouver, B.C.

Dr. Charles Scriver
Associate Scientific Director
Alva Professor of Human Genetics
McGill University, Montreal, Que.

Dr. Ronald Worton
Associate Scientific Director
CEO & Scientific Director
Ottawa Health Research Institute, Ont.

Dr. Lap-Chee Tsui
Director, Scientific Advisory Board
Geneticist-in-Chief
Hospital for Sick Children, Toronto, Ont.

Dr. Ron Woznow
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Dr. Louise Desjardins
Manager, Business Development

Mr. Stephen Herst
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Ms. Janie Patrick
Manager, Finance

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Manager, Communications

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CANADIAN GENETIC DISEASES NETWORK
RÉSEAU CANADIEN DE MALADIES GÉNÉTIQUES

Canadian Bioinformatics Workshops

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